NUISANCE WILDLIFE MANAGEMENT ASSOCIATIONS

WCT encourages membership and active involvement in national, state, and provincial associations. To include your association in this space, send the information to: Bob Noonan, Editor, WCT Magazine, POB 130, Canaan, ME 04924

NATIONAL WILDLIFE MANAGEMENT ASSOCIATION (Update)

Proposal: An Association be formed as a not-for-profit organization under 501 (C) (3) Internal Revenue Code . Board of Directors consisting of CEO, President, Vice-president, Secretary, Treasurer, Communications Administrator, and one Director from each State Association. Committee Chairpersons – one for each committee deemed appropriate (all directors would be asked to chair or serve on a specific committee). If each state had a representative on the Board, there could possibly be 55 persons on it. This board would vote and conduct business as the representative body of all members. A Business Manager could be hired to work for the Association, and be tasked by the Board to perform information gathering and conduct day to day business of the Association.

The Board of Directors would vote on issues and conduct business on behalf of the membership.

Input on all issues must be received from the field for the Association to be effective. This input should be channeled, whenever possible, through a state level association. For example, an issue is tabled and sent to the field for comment. A notice would be sent via mail, e-mail, or phone to the point of contact at the state or district level, who in turn sends it to the membership. Members input is collected and returned back up the line to be condensed on a national level. When this happens the issue has received input from operators across the nation, not just from a few individuals. Individual members from states that do not have associations would also be able to provide input directly to the Board of Directors. A statement or policy that has nationwide support can be made in regards to the issue. Communication is critical and input from the individual operator is essential.

For all of the above reasons NWCOs must join forces and be active in Local or State level associations, and those associations must be a part of the national group of associations. Some states don't have an association—this does not stop the operators from forming within their state or joining other state's associations to stay in touch. A National Association can make it happen: Contact: Tim Julien, President, 1832 N. Basil Ave., Indianapolis, IN 46219. Telephone (317)895-9069, E-mail tjulien@iquest.net

The **National Animal Damage Association** (NADCA) is the oldest group of wildlife damage management professionals. Contact: Grant Huggins, Noble Foundation, P.O. Box 2180, Ardmore, OK 73402

The **National Animal Control Association** (NACA) represents municipal and state animal control/care employees, police and humane officers, and public health and wildlife officials. For more information, call: 1-800-828-6474.

The **Northeast Association of Wildlife Damage Biologists** (NEA-WDB), for wildlife professionals from the 13 northeastern states and the 7 eastern Canadian provinces. Members receive quarterly newsletter. Contact: Dennis Slate, President, Box 296, Peverley Road, Tilton, NH 03276. Tel:(603)225-1416.

The **Connecticut Nuisance -Wildlife Control Operators Association**. Contact: Paul Magnotta, Secretary, P.O. Box 381, Durham, CT 06422. Tel:(860)349-9940.

The **Indiana Animal Damage Control Association** (IADCA). Contact: Tim Julien, President, 1832 N. Bazil Ave., Indianapolis, IN 46219. Tel:(317)895-9069

The **Massachusetts Association of Problem Animal Controllers** (MAPAC). Contact: Stephen Marken, Treasurer, 1374 Concord St., Framingham, MA 01701

The **Michigan Animal Damage Control Association** (MADCA). Contact: Kevin Syperda, Secretary, MADCA, 17504 Briggs Rd, Pierson, MI 49339. Tel:(616)636-5594.

The **New Jersey Urban Wildlife Management Association** (NJUWMA) is seeking members. Contact: Karen Dwyer, P.O. Box 261, Audubon, NJ 08106. Tel: (6609)547-8464

The **New York State Wildlife Management Association** (NYSWMA). Contact: NYSWMA, Bob Meakin, 5721 Middle Rd., RD 2, Box 176, Munnsville, NY 13409. Tel:(315)495-5561 (evenings)

The **Tennessee State Nuisance Wildlife Control Operators Association** is seeking members. Contact: Mike Cable, RT 1, Box 389, Cripple Creek Rd., Watauga, TN 37694. Tel:(423)543-5197 (evenings)

The **Washington State Nuisance Wildlife Control Operators Association**. Contact: Don Goetschius, President, 2507 NE, 102nd St., Vancouver, WA 98686. Tel:(360)573-7130 (evenings)

The **Nuisance Wildlife Operators Association Of Nova Scotia** (NWOANS). Contact: Mike Larade, President, NWOANS, Site 30, RR #6, Box 72, Armdale, Nova Scotia, Canada B3L 4P4. Tel:(902)497-2582.

THE BATS OF IOWA

Bats are among the least understood and most misrepresented of all the mammals in Iowa. While a healthy respect is due any wild animal, the fear and paranoia that many persons have for bats is both regrettable and generally ill-founded. These attitudes largely result from inaccurate information and sensationalism in news stories. Misinformation, often given by knowledgeable professionals, only increases the prejudice and superstition that surrounds these unique flying mammals. This guide provides a summary of some general aspects of bat biology and, in particular, the current information about those species that occur in Iowa. Our hope is that such information will be used not only to correctly inform the public about bats, but will help instill a more rational attitude toward these beneficial and relatively harmless animals. Since there are so many kinds of bats and their habits are so varied, the generalizations presented pertain to the nine important insect-eating species that compose the bat fauna of Iowa. References such as America's Neighborhood Bats by Merlin D. Tuttle and Just Bats by M. Brock Fenton contain additional information about bats.

THE IMPORTANCE OF BATS

Throughout most of the world, bats play important ecological roles, having both direct and indirect benefits to the ecosystems they inhabit. Bats which are fruit and nectar eaters, for example, provide the primary and sometimes only means of seed dispersal and pollination of many tropical forest plants. In fact, more than 450 products used by humans come from bat-pollinated plants. Products include food (bananas, cashews, dates, figs); wood (balsa); fiber (kapok); beverages (tequila); dyes, fodder, fuel and medicines. Some tropical bats even eat small vertebrates, including fish and frogs. There are also three species of vampire bats that consume bird or mammal blood. All vampires, however, are found from Mexico southward; none occur in the U.S. or Canada. Most bats in North America feed on insects of various sizes and kinds. The little brown bat, for example, may capture up to 600 tiny insects, including mosquitoes, in a single hour (Tuttle 1988). The larger brown bat, on the other hand, often feeds on a quantity of moths and beetles of agricultural importance (See Whitaker 1993 for details of pest control by bats).

Bats should be considered for what they really are—integral members of our ecosystems. As such, they deserve attention from both conservationists concerned with species preservation and the general public. Worldwide, bat populations are declining, some reaching critical levels, necessitating steps to protect them. While some efforts have been made in the United States through the Federal Endangered Species Act, most declining species are not adequately protected. In Iowa, all bats in their natural habitats and outbuildings are protected as nongame species under Section 109.42 of the Code of Iowa. Bats in a building occupied by humans are not protected under the Iowa Code with the exception of the Indiana bat which is an endangered species and is protected by state and federal law in all locations. Removal techniques are described in later sections of this publication.

MYTHS AND DISEASES

Although of both ecologic and economic importance, bats have been culturally valued in only a few societies, most notably in China. In nearly all cultures, however, superstitions and misinformation have prevailed, resulting in needless and senseless persecution of bats. Some false notions, such as bats deliberately entangling themselves in women's hair or that bats are blind, can be easily dismissed as old wives' tales. Other misinformed ideas are more difficult to change. Perhaps the most serious of these is that "most bats carry disease," particularly rabies and histoplasmosis. While rabies is a serious disease of the central nervous system and does occur in a small percentage of bats (less than 1/2 of 1%), the majority are free of the disease virus. Furthermore, only 11 cases of human rabies transmitted by bats have been documented in North America in more than 30 years, a far lower number than from many other wild and domestic animals.

The early suggestion that bats could carry rabies without showing clinical symptoms was incorrect because bats that contract the disease die quickly and rarely show the aggressiveness shown by rabid dogs and cats. Like any wild animal, bats should be handled cautiously even though most species in Iowa cannot puncture human skin with their teeth. Healthy bats found in homes should be captured with a heavy glove or net and released outside to carry on their normal ecological roles as insect eaters. If any bat appears sick or shows abnormal behavior, it should be sent to the hygienic laboratory in Ames or Iowa City. Because of fear and misinformation, many bats are automatically sent for analysis. (see Table 1 for "high risk" bats analyzed for rabies by State Hygienic Laboratory, Coralville, 1979-1983 and 1986-1991). This fear also causes some people to undergo the treatment for rabies. Anyone participating in post-exposure treatments for rabies should be in contact with a medical doctor but also consider both details of the bat encounter and potential side effects of the treatment. Likewise, anyone handling bats regularly who is considering a pre-exposure treatment, such as the human diploid cell pre-exposure vaccination, should know the potential side-effects of the vaccine before taking it. If there is any doubt, the State Health Department or the Center for Disease control in Atlanta, Georgia, should be contacted.

Table 1. Numbers and species of Iowa-taken bats analyzed for rabies at the State Hygenic Laboratory, Coralville, from 1979-1983 and 1986-1991. Numbers in parentheses indicate the number that tested positive for the rabies virus. Tuttle (1988) calculated <.05 percent of the bats contract rabies. The 4.1% is higher than the wild population because "sick" bats are more apt to be caught by humans and sent in for testing.

Species		1979-1983	1986-1991	Total
Big Brown Bat		247 (7)	183 (10)	430 (17)
Little Brown Bat		40 (1)	21	61 (1)
Red Bat		25 (1)	11 (1)	36 (2)
Northern Long-eared Bat		8	16	24
Hoary Bat		5	6 (1)	11 (1)
Evening Bat		2	--	2
Silver-Haired Bat		1	1 (1)	2 (1)
Eastern Pipistrelle		1 (1)	--	1 (1)
Total		329 (10)	238 (13)	567 (23)
Percent positive of "high-risk" bats				4.1

Histoplasmosis is also a disease associated with bats. The disease organism is a soil fungus sometimes found in both bird and bat fecal droppings. Droppings of poultry and pigeons are the primary source of the infection for humans. Although the fungus grows most readily in moist areas, it has occasionally been found in droppings in hot attics where bats roost. Anyone entering such an area should avoid stirring up and breathing dust where bird or bat droppings have accumulated. When removing droppings, use a properly fitted respirator that can filter particles as small as two microns in diameter. There is no evidence of any other risk to humans from bat droppings.

NATURAL HISTORY

As members of the Order Chiroptera,[1] bats comprise the second largest mammalian order. Because they play interesting and often unique roles in the natural world, bats come in many sizes and colors, including red, yellow, and white, as well as various shades of black and brown. Although all bats can see, some have much larger eyes than others. Some have interesting facial adornments while others are rather plain looking. A few have disproportionately large ears and others rather small ones. There is even a variation in time when bats feed. Although most bats are active after dark, many of the large tropical fruit-eating bats feed during the daylight hours.

Feeding and Roosting

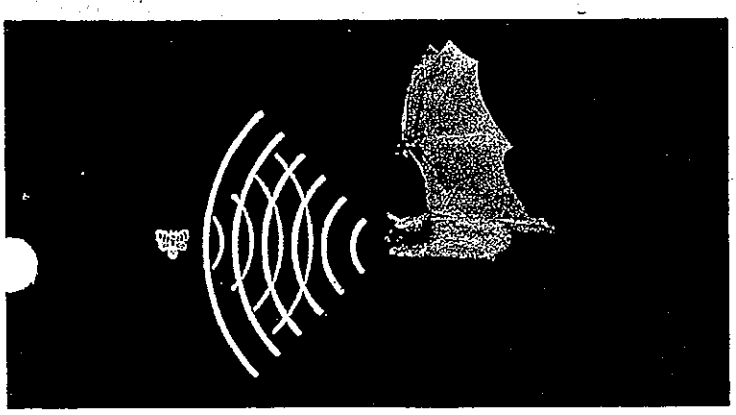
It is in the pursuit of night-flying insects that one of the most interesting adaptive features of bats is best developed. Bats can echolocate flying prey by emitting vocal sounds from the larynx and mouth that are usually, but not exclusively, in the ultrasonic range (up to 180 kHz)[2]. These sound waves strike the prey and return as echoes (sonar waves) that are funneled by the ears into a specialized portion of the brain. So specialized is this mechanism that bats can even compensate for rapidly changing distances and angles as they approach their prey. Excellent summaries of how bats use their sonar systems are provided by Fenton (1983) and Tuttle (1988).

Insect-feeding bats can often be seen foraging in twilight hours along streams and forest edges or in town under street lights. The foraging flight is erratic since bats dive after the insects, catching them with their mouths, wing tips or tail membranes. Insects too large to be handled in flight may be taken to a night roost to be eaten. Since bats prefer juicier insect parts, legs and wings usually are discarded.

When not foraging, bats utilize a variety of roosts. Some species have alternate day and night retreats, the former being the more secluded. Although Iowa's bats generally use natural roosts (e. g., loose tree bark, caves, tree cavities and foliage), some, especially the big and little brown bats, also utilize buildings or other man-made structures. In most North American species, males generally do not roost with the females and young.

When evening approaches, roosting bats become restless and often are noisy prior to departure. If their roosting shelter is large, the bats may even fly about before emerging. Upon departure, they frequently go first to water and drink by skimming the surface and scooping water with their lower jaws. Bats may then feed for more than two hours before returning to their roosts.

[1] Chiroptera is Greek for "winged hand."
[2] The human upper hearing limit is about 20 kHz.



◀ **Simple diagram showing how bats use echolocation to locate objects, including prey.**

For many species, there is a second shorter feeding period just before dawn; but by daylight, or shortly thereafter, all bats have returned to their day retreats. Females usually modify this pattern when their young are born since nursing mothers must spend more time with their offspring.

When a bat lands in the roost, it banks slightly then catches hold with its hind feet. This maneuver, which resembles a cartwheel, puts it in the characteristic upside-down roosting position. While such a position may aid in detection of predators, the primary advantage seems to be in facilitating take-off. The bat simply releases its hind feet, spreads its wings and becomes airborne. However, many species can crawl with their wrists and hind feet along flat surfaces to jump-off points for flight or can simply flip into the air using both wings and legs.

Migration, Hibernation and Reproduction

Fall is a time for migration for most North American bats. During this time, large numbers of bats may be flying in and around caves, mines or similar cavernous structures. This phenomenon (swarming) may be associated with reproduction since mating occurs in many species during this time of year.

Although fall migration may commence as early as late July, by August most bats are "moving," and may seek temporary refuge in or on buildings enroute to their places of hibernation. At this time, many bats store fat used in both migration and hibernation. Additional fat deposition, however, may occur after arrival at the wintering site (hibernaculum). In Iowa, four species—little brown myotis, northern myotis, eastern pipistrelle, and big brown bat—commonly hibernate in caves, and mines in eastern counties. A fifth species (Indiana myotis) has been found hibernating in only two places in Dubuque County. Other bats migrate southward. The only species known to overwinter in buildings in Iowa is the big brown bat. During hibernation, the bat's depressed body temperatures reduce metabolism and fat utilization. If hibernating bats are disturbed or aroused, their metabolism increases, depleting fat reserves and diminishing their chances of surviving the winter.

While most mating activity occurs prior to hibernation, some takes place during winter arousal periods when there are prolonged spells of warm weather. In many bats, sperm cells are retained in the female's uterus until spring when ovulation and fertilization occurs. Gestation is about 50-60 days, with most young being born between late May and late June, soon after females have returned to their summer roosts. Colonial species form nurseries of 50 to 1,000 or more individuals in a variety of locations, including tree hollows, under loose tree bark, and in buildings. Females of solitary species roost in tree foliage.

While most bats produce one or two young per year, the red and hoary bats regularly have three or four. When birthing, the female turns right-side up as the young is born, receiving the baby in a pouch formed by the tail membrane. Naked and with closed eyes, the young bat resembles a miniature adult. In colonial species, the young (normally left in the roost when the mothers forage) form small clusters. Returning mothers recognize their own young by their own distinct odor and/or sound.

Young bats grow rapidly and are able to fly in about three weeks when they are approximately three-fourths grown. In Iowa, this usually is in late June to mid-July. After the young are weaned, the nursery colony disperses. Hence, by late July or early August most young of the year, having left the nurseries, frequent temporary roosts elsewhere.

Ectoparasites

A variety of ectoparasites have been found in fur, in ears, and on the wing and tail membranes of bats. Several kinds of bed bugs, fleas, mites, chiggers and lice have been taken from bats in Iowa, especially colonial species. Since such ectoparasites are host specific in their feeding habits, there is no danger of human infestation by bat parasites. For further information about bat parasites, consult Fenton (1983) and Tuttle (1988).

Longevity

For their small size, bats are surprisingly long lived. This longevity, however, is a necessity for species survival given the generally low reproductive rate of one or two young per year for most species. While data are too scarce for age estimates of non-colonial species (i. e., silver-haired, red and hoary bats), the following longevity records exist for those that are colonial: little brown myotis - 33 or 34 years in other states, northern myotis - 18.5, Indiana myotis - 13.8, eastern pipistrelle - 14.8, and big brown bat - 19.0. The oldest individual known from Iowa was a pregnant female little brown myotis caught at the Manchester Fish Hatchery 23 years after it had been banded (Bowles 1983)!

FOR MORE INFORMATION ABOUT BATS -

GO TO WWW.BATCON.ORG

Then go to "Bats in Building Project: Dealing With Unwanted Guests".

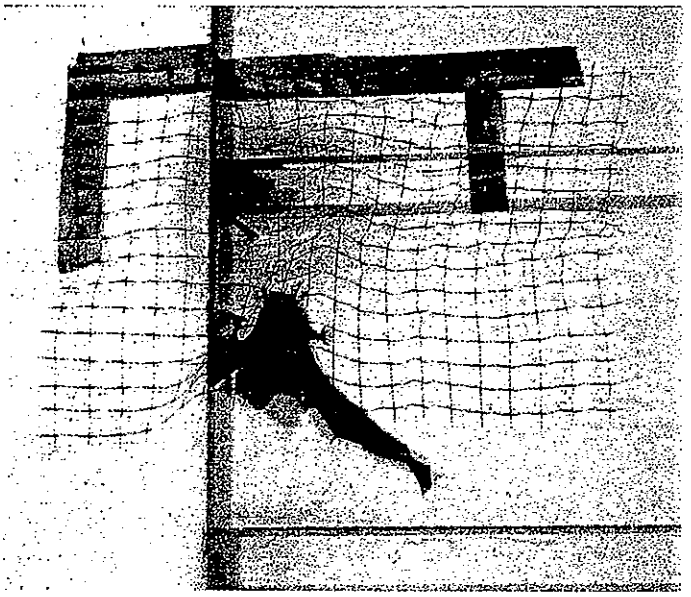
Bats in Buildings

For most people in Iowa, encounters with bats are uncommon, even though both big and little brown bats regularly utilize man-made structures. Bats that enter buildings are often migrants seeking temporary roosts, or young of the year that have left their nurseries. If a bat is encountered in your house, try to shut it in a room, then open a window and remove the screen. If you must catch the bat, use a net, cloth, leather glove, or place a plastic container over it and slide cardboard underneath. Take the bat outside and gently place it on a branch or toss it upward.

In winter, a hibernating big brown bat hanging in the attic is best left alone, it will find its way out in spring. Be tolerant and remember that a few hibernating bats do not constitute a threat to you. Most methods used to exclude or control small numbers are either ineffective and costly (e.g., ultrasonic sound producers) or temporary (e. g., moth balls), and may cause the bats to move from secluded retreats to places where encounters with people are more likely. It is best to seal the attic well and make sure doors fit tightly. Since bats can move from one place to another within building walls, make sure cellar doors are also tightly fitting and kept shut. Persons with bat colonies in buildings should not be unduly frightened because the bats will not attack. Examine the attic for openings or gaps during daylight hours or in the early evening, usually about 15 minutes after sunset. Wait until fall (about September) to plug openings, after the bats have left their summer roost and before cold weather has begun. Sealing thoroughly is the only safe and permanent method to exclude bats.

When it is not possible to wait until after the bats leave in fall, a half-inch polypropylene bird netting (used to protect fruit trees) can be hung during the day where bats exit so as to allow emergence but prevent reentry. A 2-foot strip of netting can be fastened with duct tape or staples several inches above the exit opening and extended about a foot on either side and below (top photo, this page). Such methods should be attempted only in spring before young are born, or in late August after they can fly. You should never seal bats inside a building.

In exceptional cases, other methods may be necessary to use, but only by professionals who are familiar with bat control and who understand the habits of the species involved. Before any action is taken, you should recognize that most bat colonies do not cause problems and in most cases it is best to be tolerant and leave the bats alone.



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Putting up netting over known bat entrances allows them to leave but not to return.

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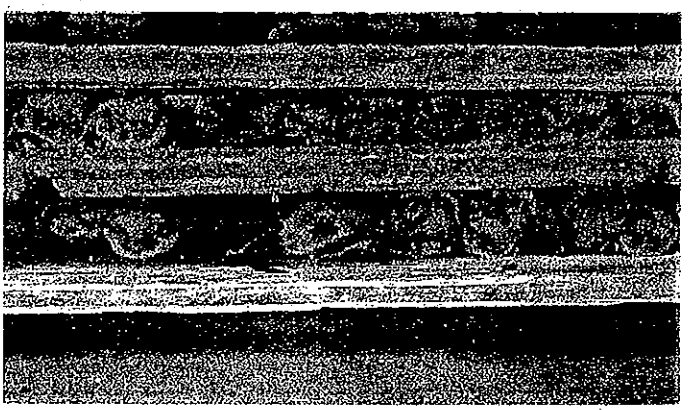
Little brown bats inside a bat house.

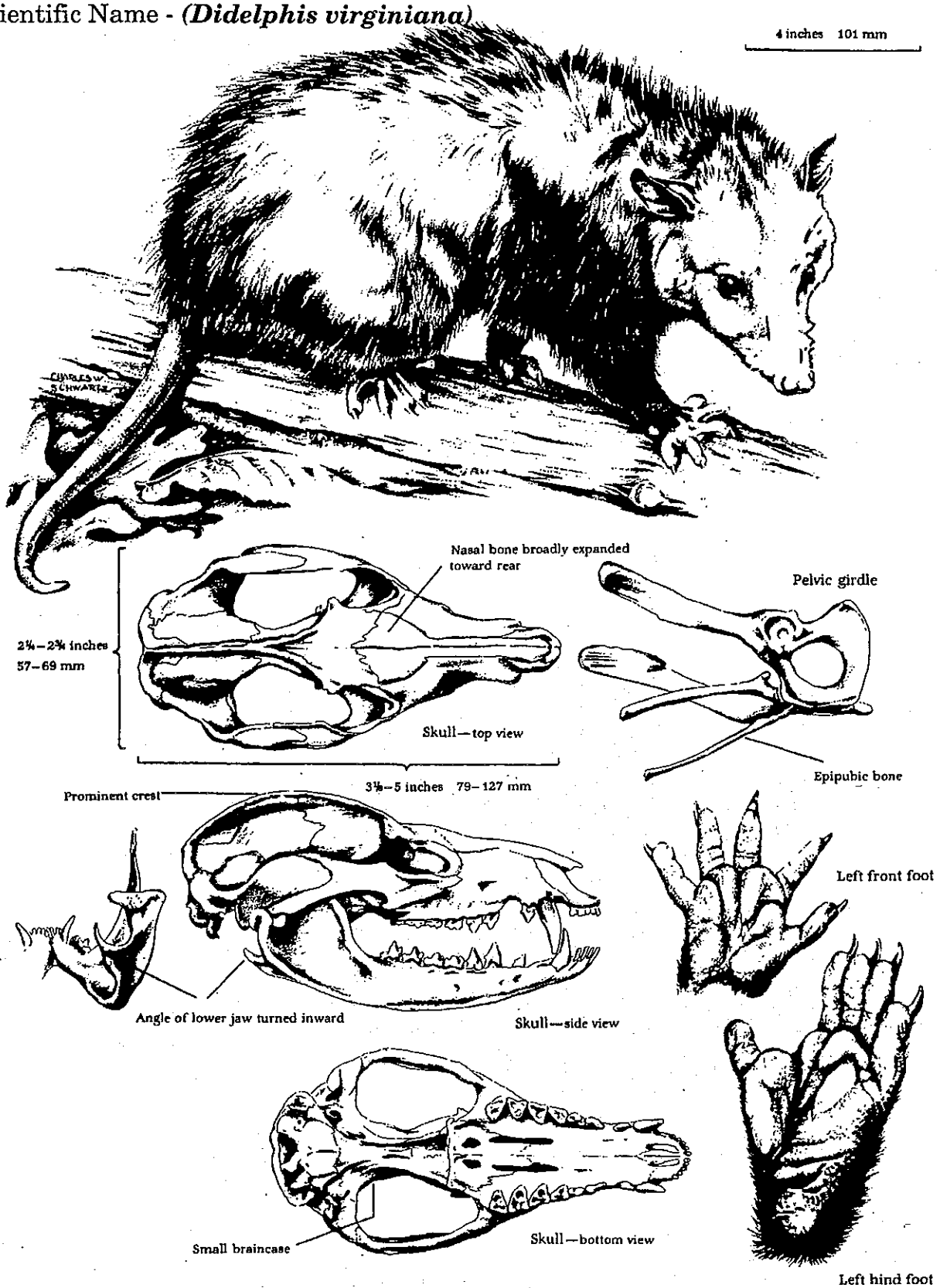


(Notes)

Iowa's Furbearer Resource

Common Name - **Opossum**

Scientific Name - ***(Didelphis virginiana)***



Common Name - **Opossum**

Scientific Name - ***(Didelphis virginiana)***

Description: Opossums are North America's only marsupial, or pouched mammals. An adult opossum is about the size of a large house cat and resembles a cream or gray colored rat with a pointed snout and a long, naked tail. The gray color is from the white guard hairs over black-tipped underfur. The ears are naked, black at the base and lighter at the tips. The female has a fur-lined pouch on the belly, similar to that of a kangaroo. The tail is prehensile, meaning it can be used to grasp branches or other objects. Opossums range in weight from 4 to 12 pounds but average about 6. At the same age males may be twice the size and length as females.

Habitat: Opossums are interspersed throughout most Iowa habitats, although they may prefer brushy areas near streams. Den sites include cavities in rocks, brush piles, trash heaps, hollow trees, fallen logs and old buildings.

Habits: Opossums are shy, secretive and primarily nocturnal. They tend to be somewhat nomadic and have no fixed home range. Opossums are not aggressive and, when pursued, often climb trees in an attempt to escape. A common means of defense is feigning death which is so characteristic that it is known as "playing opossum." The animal rolls over on its side, becomes limp, shuts its eyes and lets its tongue hang out. The heart beat is slowed. This reaction is a brief nervous shock, but the animal quickly recovers and escapes at the first opportunity. Although neither sex is particularly active when the temperature is below 20° F, females show a greater tendency than males to "hole up" during very cold weather. Their feet are adapted for climbing and the opposable toe on the hind foot assists in holding onto small branches. They have the ability to support themselves entirely by the tail if at least half of it grasps a branch.

Reproduction: Most breeding occurs in February or March, but a second peak in breeding activity occurs in late May through June after the first litters are weaned. A female may breed at either or both of these times. The average number of young is nine, but ranges from 5 to 13. Young are born blind and incompletely developed. Each is less than one-half inch long and weigh 1/175 ounce. The young climb up a fur pathway into the pouch and attach to a teat for about 60 days as they continue to develop. At 60 days of age the young are about the size of mice and the eyes are open. Young stay with the female for about 100 days. Breeding occurs the year following birth.

Food: Opossums are omnivores and will eat almost anything.

Sign: Opossum tracks are very distinctive, especially the wide angled "big toe" (opposable thumb) on the hind foot. Opossum droppings are not distinctive and vary according to the type of food eaten.

Predators: Predators of opossums include dogs, people, foxes, coyotes and great-horned owls.

Diseases: Tularemia and rabies can occur in this species although little is known about diseases infecting opossums.

Parasites: Parasites known to occur on or in opossums are mites, ticks, lice, fleas, roundworms, flukes and tapeworms.

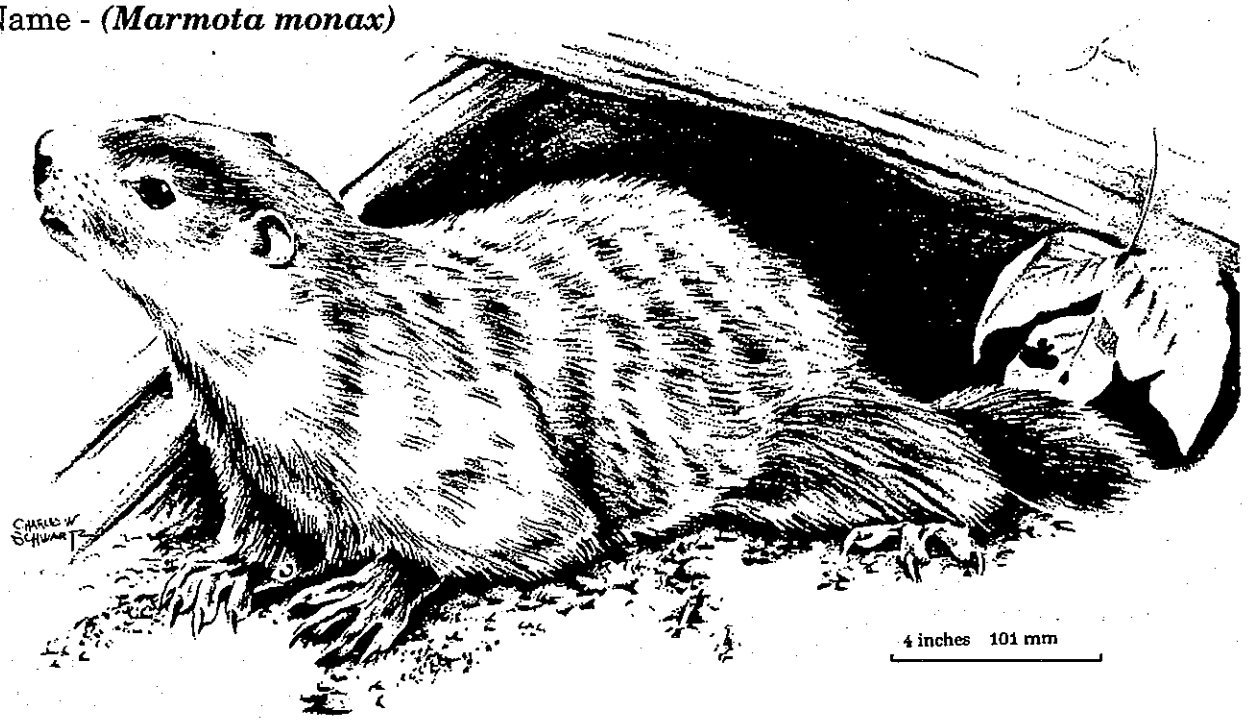
Importance: Opossums are very common furbearers. Their fur is used primarily as trim on coats; however some opossums are made into full length coats. Baked opossum is a traditional Southern dish and is quite good when prepared correctly.

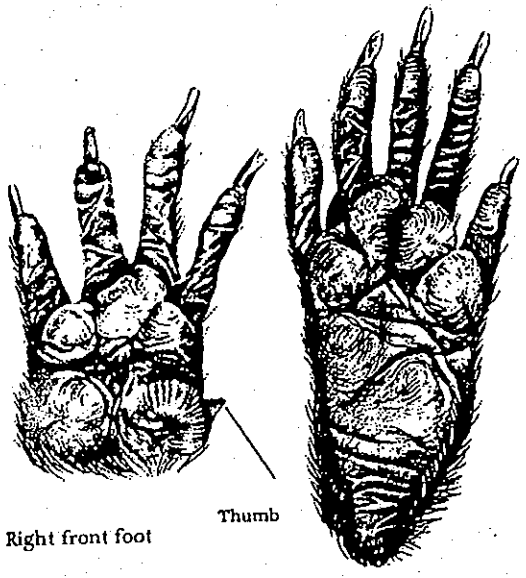
Baits and lures: Almost any strong-smelling food lure or bait will attract opossums, including tainted meat, fruit or fish.

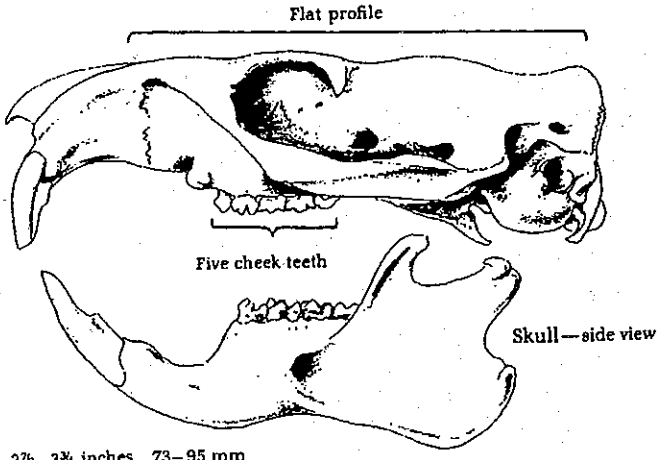
Sets: Pocket, dirt hole, blind, trail, cubby or box traps.

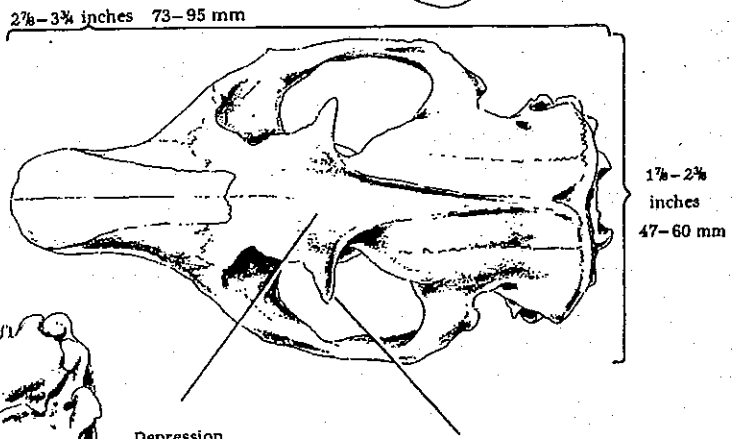
Common Name- **Woodchuck**

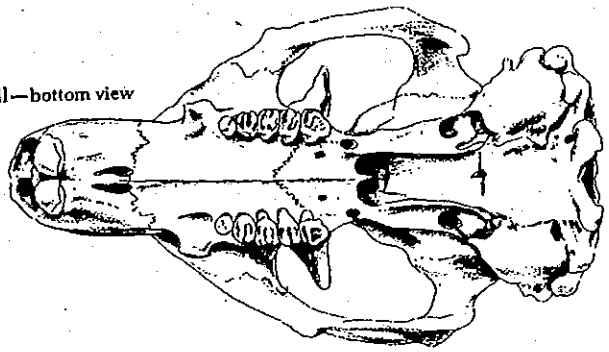
Scientific Name - ***(Marmota monax)***





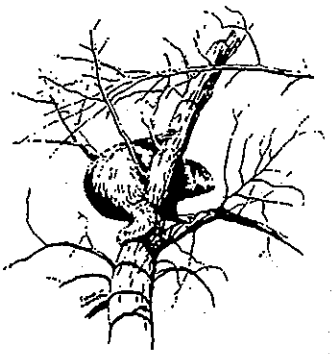






Common Name - **Woodchuck**

Scientific Name - ***(Marmota monax)***



Description: The woodchuck, also called groundhog, is a medium-sized, stout mammal with short, powerful legs and a medium-long, bushy and somewhat flattened tail. The broad head has large and conspicuously white or pale yellow incisor teeth, a blunt nose, moderately sized eyes and small, rounded ears which can be closed at will to exclude dirt. There are four clawed toes and a small thumb with a flat nail on each front foot and five toes on each hind foot. Small internal cheek pouches are present. The body fur is long and coarse and of little pelt value. They weigh between 4 and 14 pounds and will lose one-third to one-half their autumn body weight during hibernation

Habitat: Woodchucks prefer to live in the parts of timber habitat bordered by open land, or along fence rows and heavily vegetated gullies or streams. One woodchuck may have several burrows. Hibernating dens are located primarily in woodland areas while summer dens are in open grasslands or croplands.

Habits: Woodchucks feed and build up body fat during late summer. By late October most are curled up asleep in their underground nests. In this torpid state breathing is very slow and the body temperature is between 43°F and 57°F. Woodchucks emerge from hibernation in late February or early March. The animals may be active anytime of the day, but they are most active during the early morning and late afternoon. They spend considerable time basking in the sun, and when feeding they remain very alert by occasionally rising up to sniff the air and peer about. Woodchucks are solitary animals. Like the badger they continually pioneer burrows and dens for other animals to move into after they depart. Being a member of the squirrel family, they can readily climb trees.

Reproduction: The breeding season occurs in March following emergence from hibernation. A male woodchuck probably mates with several females. The gestation period is 32 days, and the average litter size is five. The young are naked, wrinkled, blind and helpless at birth, weighing about one and one-half ounce. Woodchuck's eyes open at about four weeks. They begin coming out of dens and are weaned at about seven weeks. Family groups break up in midsummer. About 25 to 50 percent of the young are capable of breeding the first spring following birth.

Food: The woodchuck is almost a complete vegetarian eating less than one percent animal matter. The plant foods consist of leaves, flowers, grasses, clover, alfalfa and certain garden crops.

Sign: Considerable den digging and tracks with claws are fairly distinguishable.

Predators: Predators include people, foxes, coyotes, dogs, weasels, mink and some large hawks and owls.

Diseases: Tularemia is the best known disease recorded in woodchucks although they are likely susceptible to a variety of other diseases.

Parasites: Woodchuck parasites include ticks, fleas, adult flies, warbles and roundworms.

Importance: Seldom are woodchucks specifically trapped because of poor pelt quality and hibernation during the regular fall trapping period. They do provide some hunting opportunities during midsummer and early fall. When prepared properly, woodchuck meat is considered a delicacy.

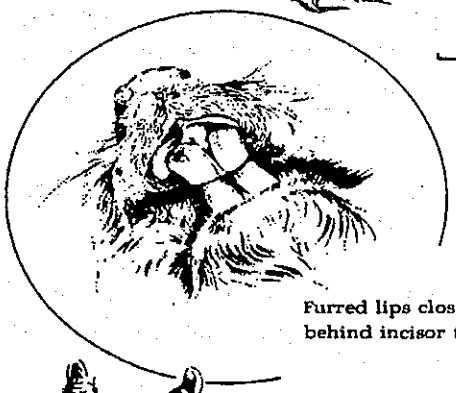
Baits and lures: Plant material including fruits and vegetables can be used.

Sets: Box traps or traps set near den entrances.

Common Name - **Beaver**

Scientific Name - ***(Castor canadensis)***

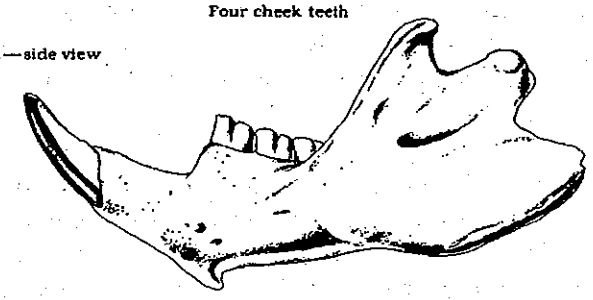
6 inches
152 mm

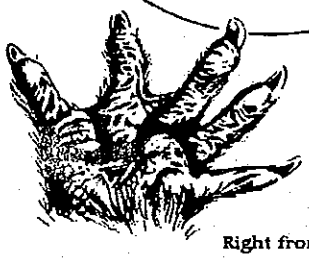


Furred lips close behind incisor teeth

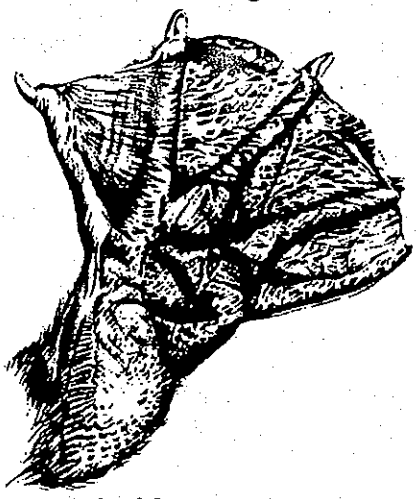
Four cheek teeth

Skull—side view





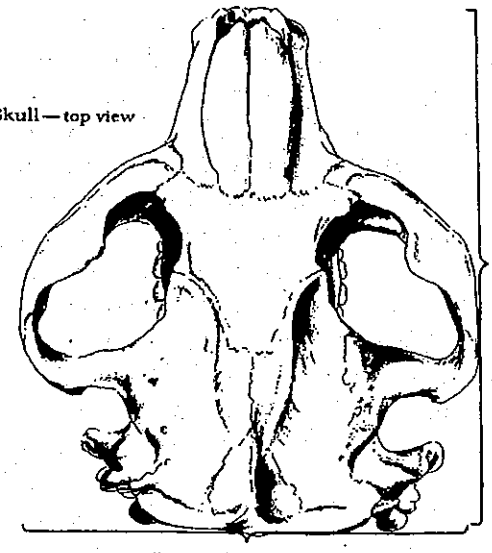
Right front foot



Right hind foot

Skull—bottom view, left half

Skull—top view



4½–5½ inches 114–139 mm

3⅛–4 inches 79–101 mm

Common Name - **Beaver**

Scientific Name - ***(Castor canadensis)***

Description: Beavers are the largest members of the rodent family in North America. Adult beavers weigh from 35 to 65 pounds and may reach lengths of four feet. Beaver are usually brown in color and have distinctively large protruding front teeth. The tail is large, flat, scaled, naked and black in color. The hind feet are webbed for swimming and considerably larger than the front feet. The front feet are quite dexterous in manipulating food and are often used for digging. The eyes and ears of beaver are small.

Habitat: Beavers are dependent on water for survival and are found along many of Iowa's waterways. Beaver particularly like to inhabit small rivers with willows and other brush lining the shoreline.

Habits: Beaver may stay under water for up to 15 minutes. It takes a beaver about three minutes to cut down a tree five inches in diameter. Beaver often build dams across streams and small rivers. The dams provide more permanent habitat than waterways which may dry up during periods with no rain.

Reproduction: Beaver breed from January through March with a gestation period of approximately 90 days. The young, kits, are born from April through June. There are typically three to four kits per litter. They are fully furred, have their eyes open at birth, weigh about one pound and are 15 inches long. The young are weaned when six weeks old and become mature when two years old. The young will live with their parents until they are mature. Most beaver do not breed until they are three years old.

Food: Beaver eat from one to two pounds of food daily. They eat up to 100 percent woody plants in the winter but eat only about 10 percent woody plants in the summer. Willow and cottonwood saplings are favorite woody plants. Corn and various water plants are preferred summertime foods.

Sign: Beaver cuttings will be easily spotted if beaver are present. Beavers may also be distinguished by castor deposits and slides, leading from the water to cuttings, cornfields or other desirable food and habitat.

Predators: Coyotes, otters and mink may prey upon beaver. People and flooding conditions are primary factors limiting the population.

Diseases: Tularemia and *giardia lamblia* (see Wildlife Diseases) are the most common diseases known in beavers.

Parasites: Lice, fleas, beetles, flies, roundworms and flukes parasitize beavers.

Importance: The search for beaver pelts was a major motivating factor for the exploration and later exploitation of North America. Beaver pelt hats and coats were the fashion standard in Europe in the early 1800s. Today beaver pelts are used to make coats, hats and trim. Beavers are the source of castoreum, which is used as a fixative in perfumes and as a trapping scent. They are also very delicious when properly cooked. Although beavers can cause damage to cornfields and drainage projects, they provide valuable habitat by constructing their dams.

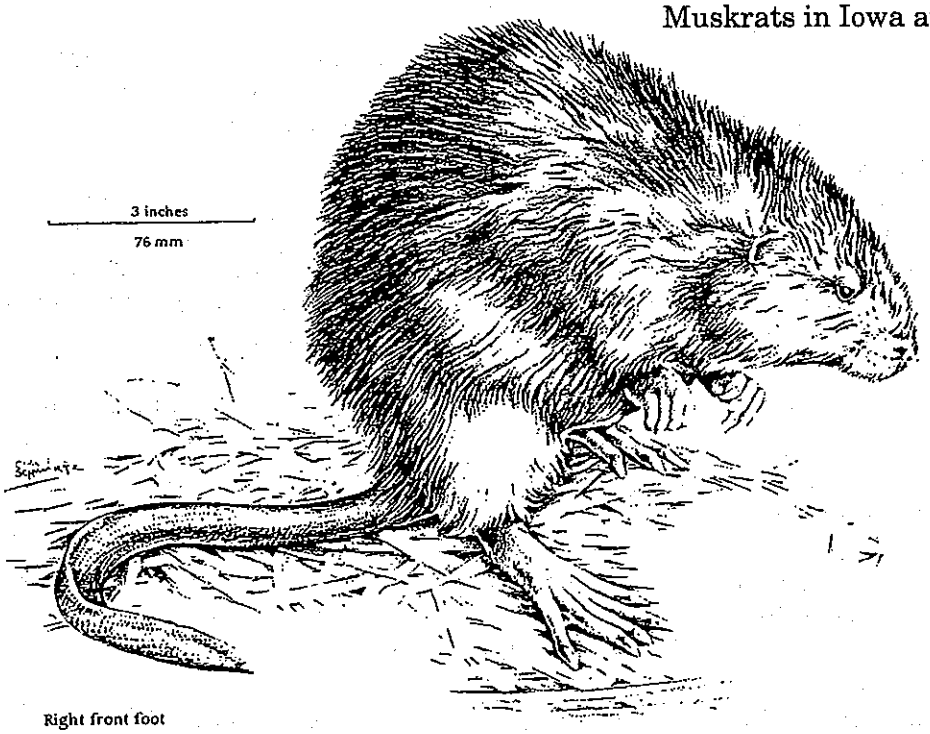
Baits and lures: Small sticks with the bark partially peeled, carrots, corn, beaver castor, sweet flag and anise are used successfully.

Sets: Scent mound, slide, spillway and baited sets.

Common Name - **Muskrat**

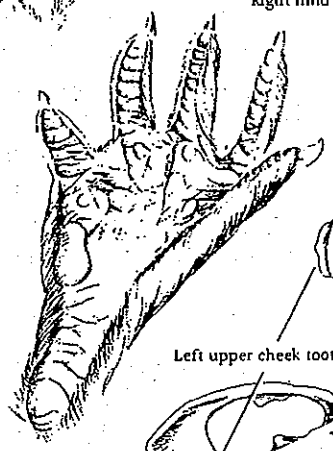
Scientific Name - ***(Ondatra zibethicus)***

Description: The muskrat is another member of the rodent family. The muskrat looks similar to the common rat but is larger. Muskrats vary in total length from 16 to 25 inches. There are 16 subspecies of muskrats in North America with many different color variations. Muskrats in Iowa are typically light brown to



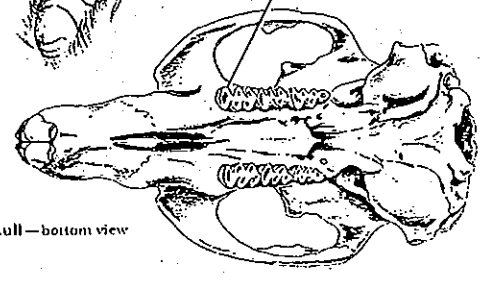
Right front foot

Right hind foot



Sharp-angled enamel folds surround four or more islands of dentine in each tooth

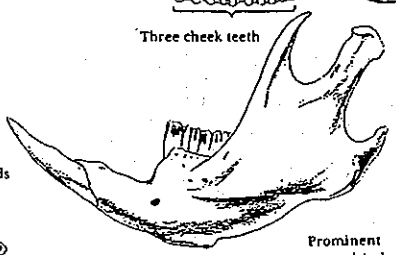
Left upper cheek tooth row



Skull—bottom view

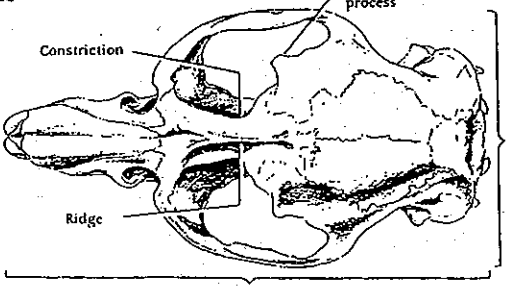
Three cheek teeth

Skull—side view



Prominent postorbital process

Constriction



Ridge

2⅜–2¾ inches
60–69 mm

Skull—top view

dark brown. The fur is medium length and quite dense. The tail is naked, laterally compressed (similar to an eel's tail) to aid in swimming and approximately the same length as the body.

Habitat: Muskrats are found in conjunction with almost all permanent bodies of water in Iowa. Muskrats are well adapted to an aquatic lifestyle and are dependent upon it for protection from predators. Muskrats can be found in the highest concentration in marshes. Populations as high as 35 muskrats per acre have been recorded on cattail marshes in Iowa.

Habits: Muskrats have the annoying habit of making their dens in pond dams and dikes. This is probably the single largest damage complaint concerning muskrats. Muskrats prefer to build houses (also known as huts or lodges) out of vegetation if it is present in sufficient quantities and the water will not wash it away. If no suitable place to construct houses exists, muskrats will make dens in stream banks. Muskrats will often use slides, toilets and feeding places repeatedly. They are nocturnal but may be active during the day in the spring and fall. Muskrats tend to be less active during nights with a full moon. They are most active during rainy nights. Usually solitary they may live as part of a group in houses in the fall and winter.

Reproduction: Muskrats are very prolific. In Iowa females may have two or three litters per year. Each litter commonly has four to seven young. Breeding activity begins in March and peaks in May and June. Some individuals may breed through September. As with most wildlife, adults have fewer litters and fewer young per litter when the population is above the carrying capacity. Individuals, especially males, become quite territorial during peak breeding times. The gestation period is about 30 days. The young become mature when approximately six months old. Only 10 to 20 percent of newborn muskrats live longer than one year with or without trapping. The young are referred to as kits.

Food: Muskrats are primarily herbivores, feeding upon the most abundant vegetation. Smaller animals may also constitute a part of the muskrat's diet if the preferred vegetation is not readily available. Cornfields neighboring bodies of water are often used as feeding areas. Cattail, bulrush, arrowhead, waterlily, dry grasses, soybeans and corn are favorite muskrat foods.

Sign: The muskrat signs most easily identified are their droppings and "feed beds." Feed beds are floating mats of vegetation where muskrats feed. Signs where muskrats have been digging to get roots of plants or eating cattails may also be identified. Narrow mudslides and muskrat houses are common where muskrat populations are high.

Predators: People and mink are the major predators of muskrats, but raccoons, great-horned owls, coyotes, dogs and foxes also prey on them. Hawks, cats, weasels, snapping turtles and some large fish may prey upon muskrats and their young, but are only of minor importance in Iowa. Muskrat meat, when properly prepared, is very good.

Diseases: Tularemia, hemorrhagic fever, septicemia and coccidiosis are all known to occur in muskrats.

Parasites: Muskrats may be parasitized by mites, fleas, roundworms, flukes and tapeworms.

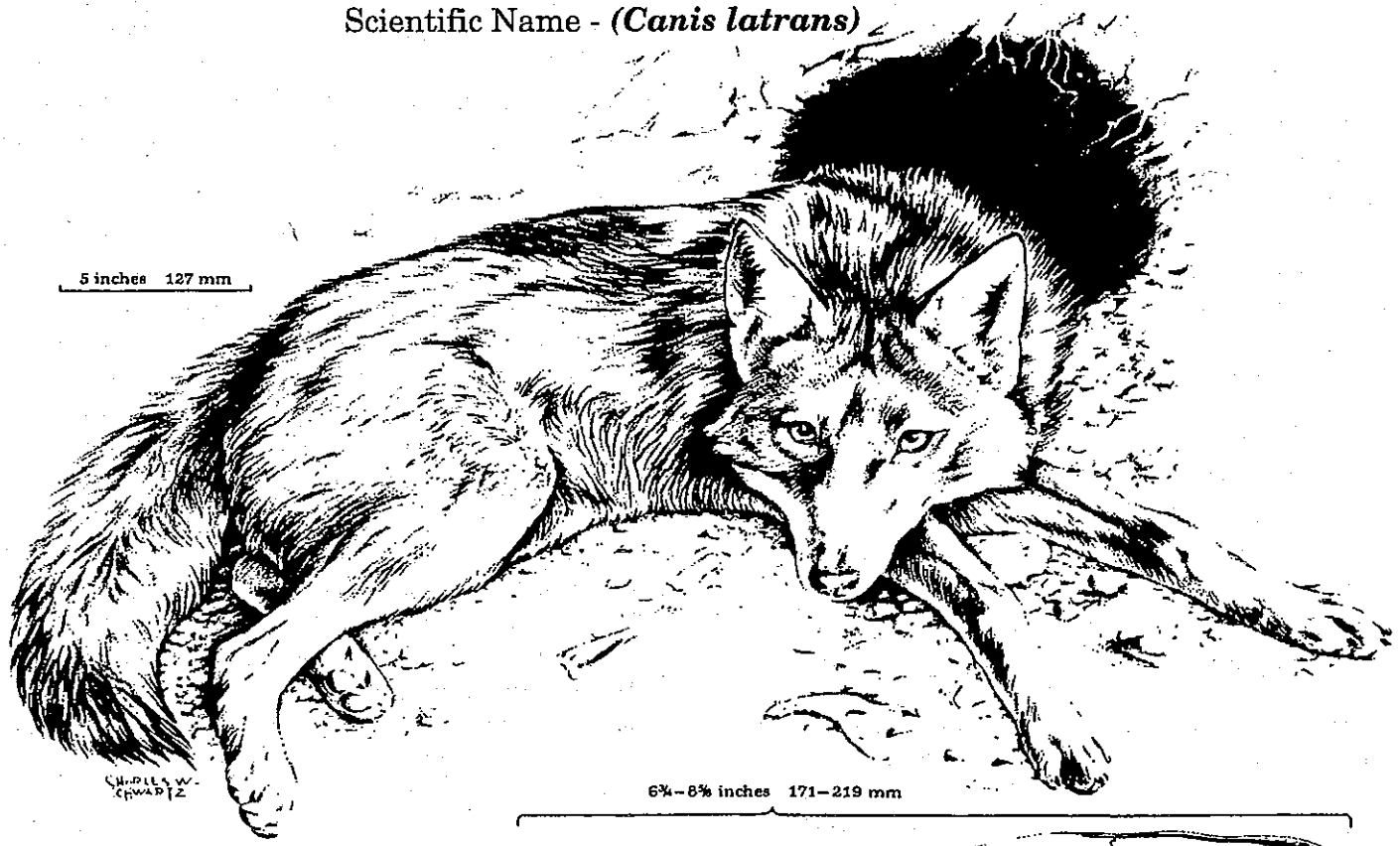
Importance: Muskrats are the most numerous furbearer in Iowa. Most muskrat pelts are sold to European countries where they are made into moderately priced coats. Muskrat musk is used extensively in trapping scents. Muskrats may cause damage to dikes and pond dams, but they are important prey for many predators.

Baits and lures: Apples, carrots, celery, corn and fish are good baits. Anise, spearmint, sweetflag, fish oil and beaver castor are good lures.

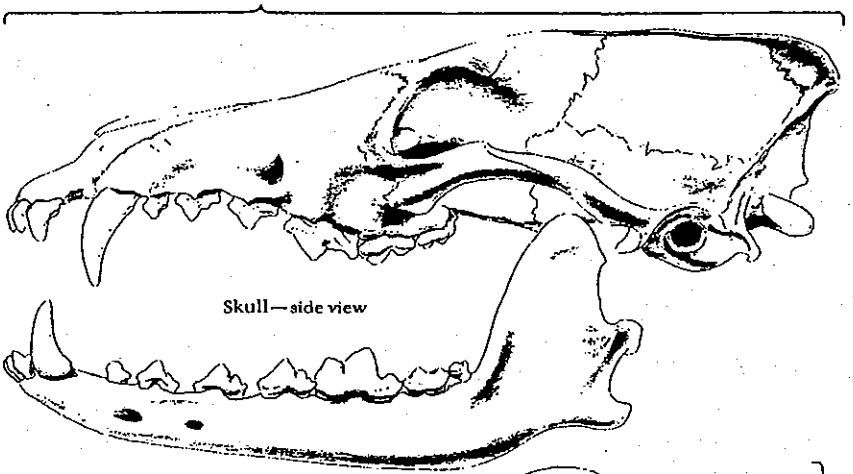
Sets: Pocket, slide, stool, feedbed, blind and conibears in trails or den entrances.

Common Name - **Coyote**

Scientific Name - ***(Canis latrans)***

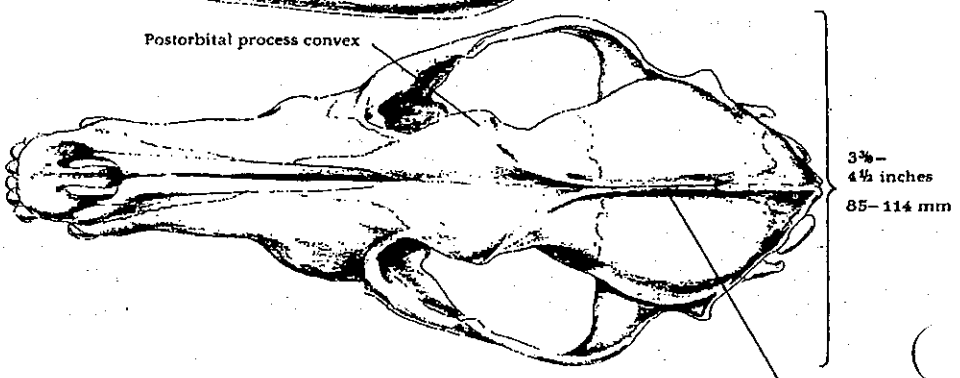


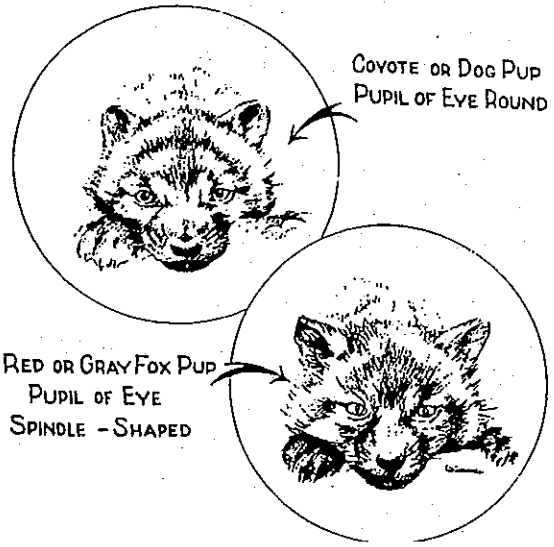
6¾–8⅜ inches 171–219 mm



Left front foot

Left hind foot





Common Name - **Coyote**

Scientific Name - ***(Canis latrans)***

Description: The coyote is extremely doglike resembling a small German Shephard. A callus is usually obvious on the front leg in the region of the elbow. The pelage is fairly long, coarse and heavy. The coyote is easily distinguished from red and gray foxes by its larger sixe, coloration, shorter tail and round pupil of the eye (foxes' pupils are vertically elliptical). (See coyote and fox pup figures lower left of page 30) Typical Iowa coyotes are colored gray to dull yellow with the outer hairs broadly tipped in black. The throat, belly and innerleg fur is white to pale gray. Coloration can vary from nearly black, to light gray and occasionally a reddish cast occurs. Adult coyotes range in length from 40 to 54 inches and in weight between 18 and 30 pounds.

Habitat: Coyotes prefer to live in brushy country, along the edge of timber and in open farmland. Dens are usually located in unused fields and are often close to timber. They may be found in a bank, under a hollow tree or log, in a rock cavity or occasionally in a dug out area in a clump of brush.

Habits: The home range of a coyote may be as small as three to four miles when caring for young, or as large as 25 to 30 miles during the rest of the year. They like semi-open country and prefer to travel on ridges or old trails. Coyotes normally hunt singly or in pairs, but in late summer or early fall may hunt with a family group. They are primarily nocturnal with peak activity periods within one or two hours of sunset and sunrise. Coyotes swim well and can run as fast as 45 miles per hour for short distances.

Reproduction: At least two-thirds of Iowa coyotes breed the first year of life. Pairing, mating and breeding activity begins in January with the peak occurring in late February thru March. Gestation is from 58 to 63 days with 2 to 15 young (usually 5 to 7) born in late April or May. Some pairs stay mated for a year while others mate for life. Pups are born blind and helpless. After five or six weeks of age they infrequently use den sites.

Food: Coyotes are carnivores, relying primarily upon rabbits and mice for two-thirds of their diet. Seasonal fruits and plants, such as plums and mulberries, are also eaten. They are opportunists, feeding on whatever is available during a particular time. Adults will occasionally feed on domestic livestock including lamb, calves and pigs. They often feed on dead livestock and are sometimes blamed for livestock kills made by dogs. Adult coyotes carry food in their stomachs and regurgitate partially digested food for pups up to eight weeks of age.

Sign: Coyote tracks are sometimes confused with certain breeds of domestic dog tracks. Generally they are more elongated and the toes are closer together than dogs. The hind portion of the heel pad of the front foot of a coyote is well lobed and spread horizontally in comparison to a dog's. Coyote scats are extremely varied in size and will overlap in size with red fox scats. The most conspicuous coyote sign denoting their presence is their howl.

Predators: Man is the most important predator of coyotes. Dogs and great-horned owls may take pups. White-tail deer have been known to kill coyotes with their feet.

Diseases: The most frequent diseases are distemper and tularemia. Rabies very rarely occurs in coyotes.

Parasites: The following parasites occur on or in coyotes: ticks, fleas, roundworms, tapeworms, flukes and mites. Occasionally mites cause coyotes to get mange, but mange does not cause as much mortality in coyotes as it does in the red fox.

Importance: Coyote fur is both durable and attractive, and is often used in trimming for coats. Although coyotes kill some livestock and poultry, domestic dogs are responsible for many livestock kills. They are important predators and assist man by reducing rodent and rabbit populations. They may provide more man hours of recreational opportunity than other furbearers during late winter months.

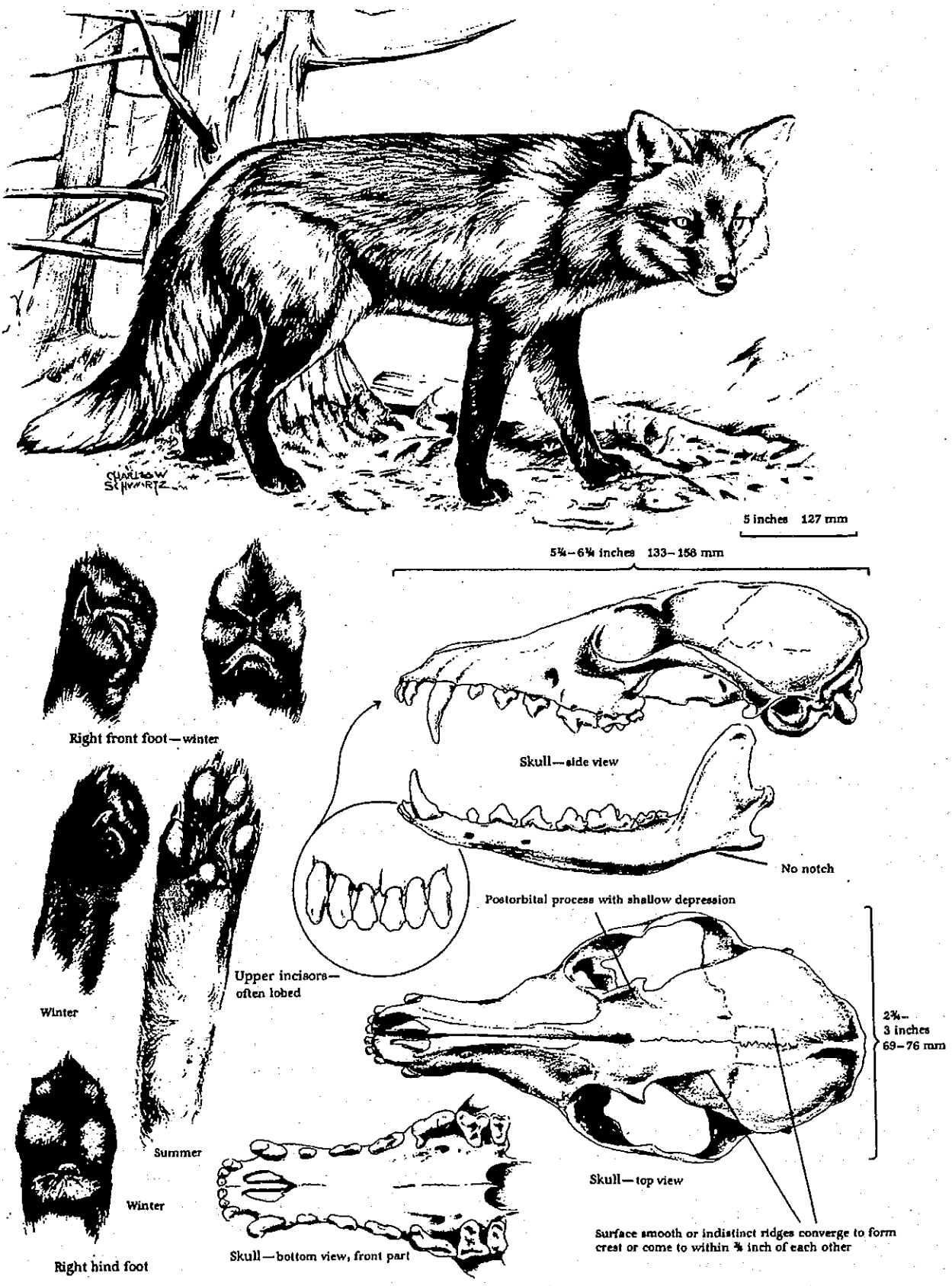
Baits and Lures: Commercial lures, fox urine, tainted meat baits and skunk carcasses are all effective attractants for coyote.

Sets: Scent-post, flat, dirt-hole and urine post.

Common Name - **Red Fox**

Scientific Name - ***(Vulpes vulpes)***

Description: The red fox is dog-like in appearance with an elongated, pointed muzzle; large pointed ears which are usually held erect



Common Name - **Red Fox**

Scientific Name - ***(Vulpes vulpes)***

and forward; moderately long legs; a long, heavily furred and bushy tail which is circular in cross-section, and long, thick, soft body fur. The pupil of the eye is vertically elliptical, a characteristic which distinguishes it from the coyote and other young animals. Typically, Iowa red foxes are colored with an orange-red coat, black legs, lighter colored underfur and usually a white tipped tail. Red foxes occur in many other color phases, including silver, cross and melanistic, but the red phase dominates. Adult foxes range from 36 to 46 inches in length and weigh between 8 and 15 pounds. A small percentage of Iowa red foxes have black tipped outer guard fur. These are referred to as a cross color phase of red foxes. Sampson foxes are poorly furred animals with no guard hairs

Habitat: The red fox is extremely adaptable and thrives under a variety of conditions. It is considered more of a prairie animal than the gray fox and prefers to den in the farmlands interspersed with grasslands. Because Iowa's woodlands are quite small in nature, it will frequent them as well. Red foxes tend to avoid areas where coyote populations are established, but some can be found in areas between coyote home ranges. Prior to the mange outbreak in the early 1950s, foxes were most abundant in southern Iowa. Now they are more abundant in the northern two-thirds of the state. Foxes often renovate dens dug by badgers or woodchucks. Dens most likely will occur in more grassland situations.

Habits: Like most predators, red foxes are nocturnal, or active at night, and "lay up" during the day. Their day is often spent on a hillside or somewhere with good visibility to observe potential danger. Red foxes often hunt along the border of fields and woodlots or along fence rows where rodents are abundant.

Reproduction: At least 95 percent of male and female (vixen) foxes breed during the first year of life. Pairing, mating and breeding activity begins in late December, peaks in late January and continues to mid-February. Gestation is 53 days, and the average litter size is six. Most foxes are born in late March. Pups, or kits, are grayish brown, blind and helpless when born. They open their eyes at eight or nine days and stay in or near the den until four or five weeks old. They are weaned at eight to ten weeks of age. Both male and female assist in rearing young.

Food: Red foxes are carnivores feeding primarily on rodents, rabbits and birds. They also consume numerous insects and fruits as they come in season. Like most predators they are opportunistic and feed upon whatever is available at a particular time.

Sign: Red fox tracks are usually more or less in a straight line, and the hind foot is narrower and more pointed than the larger front foot. The heel pad is narrow and, particularly in winter, little of the heel pad will show through the thick hair which covers the foot. Red fox scats are variable and similar to those of other canids, although noticeably smaller than most coyote scats.

Predators: The most important predators on foxes are people, dogs and possibly coyotes. Fur harvesting accounts for over 85 percent of mortalities, while roadkills, farming practices and miscellaneous mortality make up the remainder.

Diseases: Mange can be a devastating disease in high populations. Red foxes are also susceptible to coccidiosis, distemper, parvovirus, pseudorabies and rabies, but none of these diseases have as much impact as mange.

Parasites: The following parasites occur on or in red foxes: mites (which are the cause of mange), ticks, lice, fleas, roundworms and tapeworms.

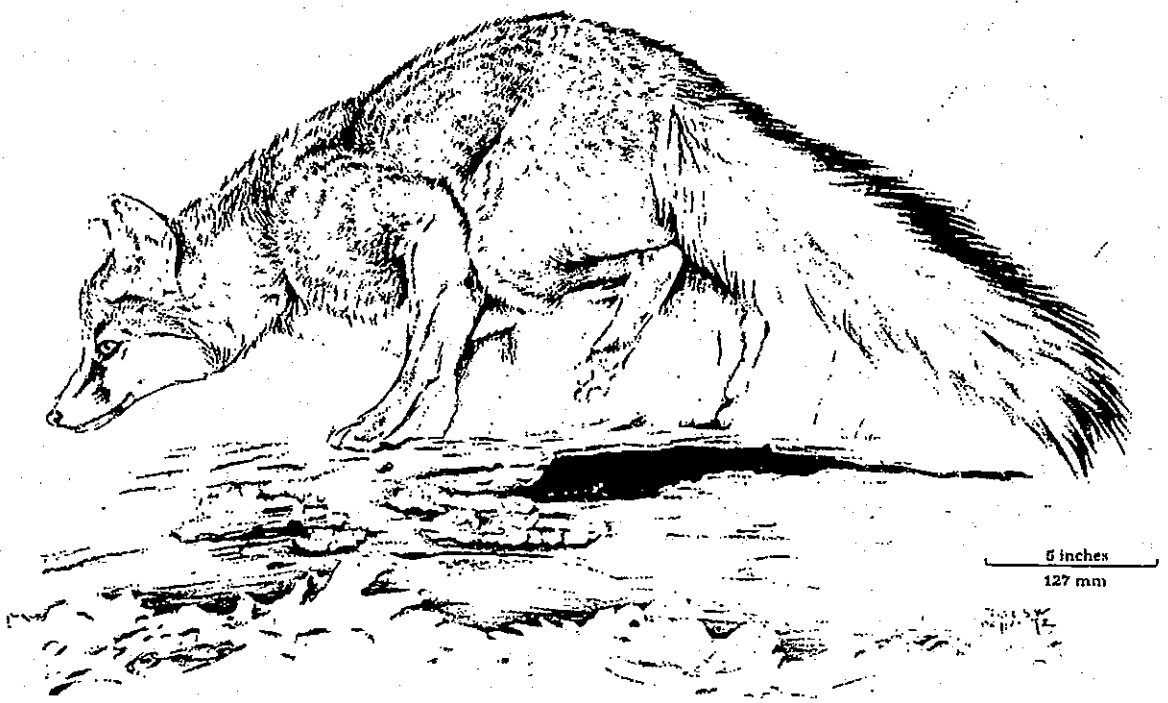
Importance: Red fox pelts are used to make many fur garments. Many different color mutations or phases of fox are raised in captivity. Red foxes are good rodent predators but have been displaced by coyotes in many areas.

Baits and lures: Commercial lures, fox urine, tainted meat baits and, in winter, skunk musk are all effective attractants for red fox.

Sets: Dirt hole, scent-post, flat set, trail set and urine post.

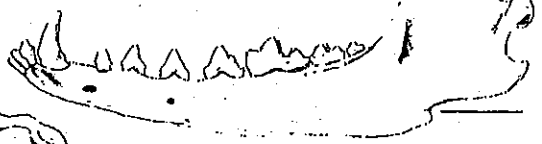
Common Name - **Gray Fox**

Scientific Name - **(Urocyon cinereoargenteus)**



4¾–5⅛ inches 120–130 mm

Skull—side view



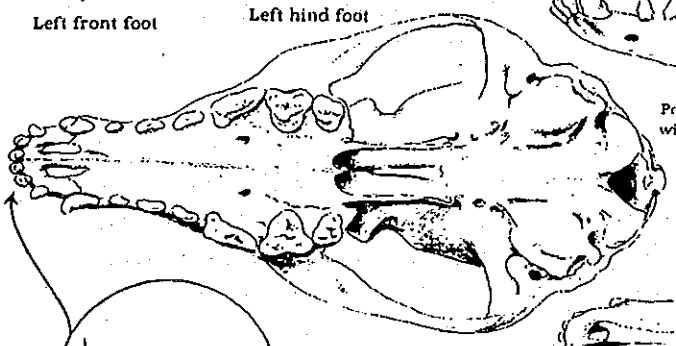
Prominent notch

Left front foot

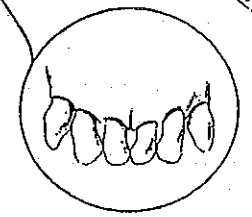
Left hind foot

Postorbital process with deep depression

Prominent paired ridges enclose *U*-shaped area more than ⅜ inch wide

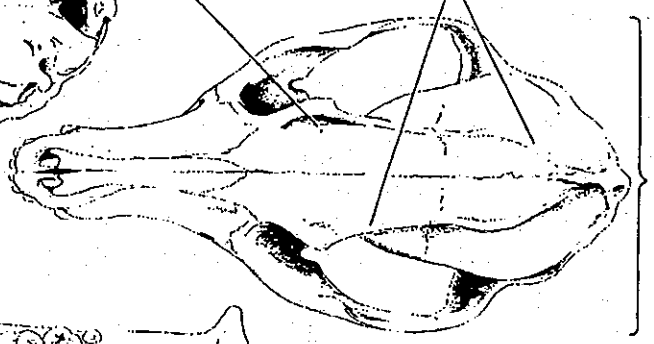


Skull—bottom view



Upper incisors—not lobed

Lower jaw—top view, left half



Skull—top view

2⅝–
2⅞ inches
66–73 mm

Common Name - **Gray Fox**

Scientific Name - ***(Urocyon cinereoargenteus)***

Description: The gray fox is slightly smaller than the red fox, weighing an average of six to ten pounds. Its fur has a coarser texture than the red fox and is colored by alternate bands of black and white guard hairs. There is reddish-brown fur on the underparts of the body. The tail is gray with a ridge of coarse, black hair along the top and on the tip. The total length of the gray fox is 35 to 44 inches with the tail being about 14 inches long.

Habitat: The gray fox lives in wooded areas and fairly open brushland. It is essentially an animal of warm climates. Since Iowa is in the northern part of its range, it uses dens for warmth more than the red fox. The dens are located in hollow logs and trees, hollows under rock piles or occasionally in the ground. They are filled with grass, leaves or shredded bark.

Habits: The gray fox is primarily nocturnal, but it can be seen occasionally during the day. In contrast to the red fox, the gray fox may climb trees using the front feet to grasp the tree trunk and the hind feet to push upward. Gray foxes are very secretive and shy but when necessary are fierce fighters. They will climb trees to take refuge from dogs. They are often quite vocal, barking and growling when cornered or captured.

Reproduction: Gray foxes breed primarily in February with a gestation period average of 53 days. Three or four pups are born in April. Gray fox dens tend to be in areas of brushy cover and are much more difficult to locate than red fox dens. At birth the pups are blackish, blind and scantily furred. They open their eyes at about ten days and remain near the den until they are approximately three months old. The family breaks up in late summer. The young breed the first year following birth.

Food: Like the red fox, the gray fox's diet consists primarily of rodents and rabbits. They are opportunistic animals, feeding upon available prey, fruits and berries as they become plentiful.

Sign: The gray fox track is smaller and rounder than that of the red fox. Scats are similar to those of the red fox.

Predators: The most important predators of the gray fox are people and dogs. Coyotes may also be a factor.

Diseases: They are similar to the ones that affect the red fox, although mange does not appear to be as devastating to the gray fox as it is to the red fox.

Parasites: The following parasites are known to occur on gray foxes: mites, ticks, lice, fleas, and roundworms.

Importance: Most gray fox pelts are sold to coat manufacturers in Germany. The coats are not as silky as red fox coats but are very durable. Gray foxes are good predators of rodents and cause almost no livestock damage.

Baits and lures: Commercial lures, fox urine, tainted meat baits, rodents and skunk musk are all effective attractants for the gray fox.

Sets: Dirt hole, scent-post, flat set, trail set and urine post.

Common Name - **Raccoon**

Scientific Name - **(Procyon lotor)**

Description: The raccoon is a stocky, medium-sized furbearer. The fur on the back is usually a grizzled black, washed with gray or yellow. The belly fur is lighter in color and of little importance to pelt quality. Pure "red," black, albino and other individual colors do occur but are rare. All raccoons have distinctively darker hair around their eyes that forms what looks like a mask. Their tail is distinctive because it has alternating bands of light and dark fur. Raccoons have a broad head with a pointed muzzle. The feet are naked and possess five prominent toes. Adults have a total length in the range of 24 to 41 inches. They typically weigh from 8 to 20 pounds. The heaviest raccoon recorded (from Wisconsin) weighed over 59 pounds; however, it is very un-

common for a raccoon to weigh over 25 pounds.

Habitat: Raccoons appear throughout Iowa. They can be found just about anywhere that food, shelter and water are available. The largest density occurs near permanent bodies of water which offer a wide variety of food and den sites. Raccoons den in hollow trees, junk piles, abandoned buildings and abandoned burrows. Raccoons are often found in cities and towns. The home range of raccoons in Iowa is about 250 acres at any one time. Home ranges overlap extensively and may change as different foods become available or as they are exhausted.

Habits: Raccoons are generally nocturnal, but they may be seen out in the daytime, especially early in the spring or fall. Raccoons will try to gain as much weight as possible in the fall, storing up a fat reserve for the cold days of winter. For this reason, raccoons have a voracious appetite in the fall. Shifts in the raccoon's diet occur rapidly in the fall as different foods become available. Raccoons will often den up during extremely cold or severe weather and take a short winter sleep, but they do not hibernate.

Reproduction: Generally, 60 percent of the females breed when one year old, while 90 percent of the females over one year old will breed. The number of yearling females that breed may fluctuate greatly depending on population density. Fewer yearlings will breed if the population is high. Males may breed when one year old, but rarely do so because older, more aggressive males out compete them for mates. Males are sexually active from late December through May or June. Most breeding activity takes place in February. Females have one litter per year. There are usually three to four young per litter. Gestation is typically 63 days. Most young are born in late April or during May. The young are weaned when eight to ten weeks old and may be seen out of the den at this time. Males do not help raise the young. The young may stay with the female as a loosely knit family until the following breeding season.

Food: The raccoon is a true omnivore. Some of the wide variety of foods consumed by the raccoon includes birds, eggs of all kinds, crayfish, insects, fish, frogs, mice, wild fruits, corn (particularly sweet corn in the milk stage) and nuts. Raccoons will eat the food that is most readily available to them but may become quite selective when food is abundant. In the spring and early summer over one-half of the raccoon's diet is animal matter. In contrast, in the late summer and fall, up to 78 percent of the raccoon's diet is plant matter. Examination of raccoon droppings will reveal the raccoon's current diet.

Sign: Raccoon tracks are quite distinctive. Tracks may be found anywhere, but they are most easily seen and studied along muddy shorelines. Raccoon droppings (scats) are also distinctive and may be found near denning areas.

Predators: People are the major predators of raccoons. Nearly 90 percent of all raccoon mortalities are caused by humans. Fur harvesting accounts for roughly 70 percent, while roadkills account for about 15 percent. Between 1972 and 1987, fur harvesters took over 250,000 raccoons annually in Iowa with a record 390,000 harvested in 1986. Since 1986, harvest has declined substantially. Great-horned owls, coyotes, as well as dogs may all kill young raccoons.

Diseases: Canine and feline distemper, parvovirus, pseudorabies, tuberculosis and rabies are all known to occur in raccoons. The incidence of rabies in Iowa raccoons, however, is very small.

Parasites: Raccoons may be parasitized by ticks, lice, fleas, botfly larvae, roundworms, flukes and tapeworms. Recently the raccoon roundworm has received much attention (See Wildlife Diseases).

Importance: Raccoons are one of the most economically important furbearers in Iowa. Raccoon pelts are used to make many types of fur garments. The baculum is a novelty item and may be marketed as an "Arkansas toothpick" or a swizzle stick. Many people consider raccoons to be a delicacy.

Baits and lures: Many baits and lures attract raccoons; apples, corn, fish, peanut butter and marshmallows are common baits. Honey, anise, apple juice and shellfish and fish oils are common lures.

Sets: Pocket, dirt hole, blind, trail, cubby and cage trap sets.

Common Name - **Mink**

Scientific Name - ***(Mustela vison)***

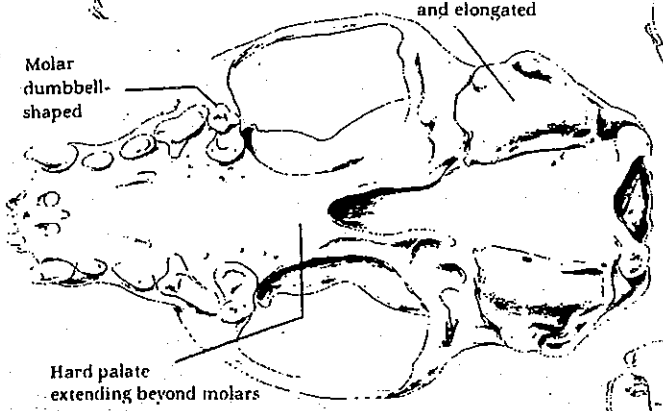
Right front foot

Right hind foot

Skull—side view

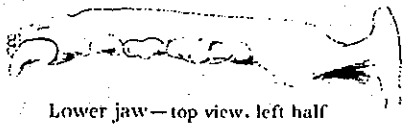
Auditory bulla greatly inflated and elongated

Molar dumbbell-shaped

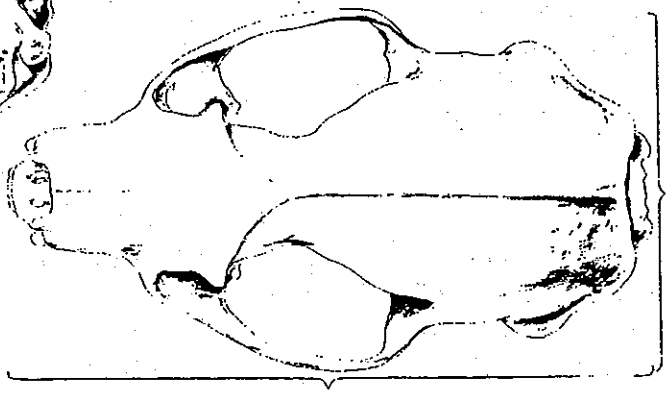


Hard palate extending beyond molars

Skull—bottom view



Lower jaw—top view, left half



1¼–1½ inches
31–38 mm

2¼–2¾ inches 57–69 mm

Skull—top view

Common Name - **Mink**

Scientific Name - ***(Mustela vison)***

Description: The mink is a member of the mustelid family. It is a small, slender, weasel-like animal. The fur is short and not very dense. Mink have short legs and inconspicuous ears. The tail is bushy and is usually one-third to one-half the length of the body. Native Iowa mink are usually brown in color with a white patch of fur on the underside of the throat. Other color phases do occur, but these are often individuals that have escaped from mink ranches. Males are generally larger than females of the same age. Males weigh in the range of one and one-half to three pounds, while females weigh in the range of one to two pounds. The total length of males is usually 23 to 28 inches, and total length of females is usually 18 to 22 inches. Mink have a very acute sense of smell, but their eyesight and hearing are moderate at best.

Habitat: Mink are almost always found in conjunction with water because of the diversity of food that is available in aquatic environments. Good places to find mink are lake shores, marshes and stream banks that have trees or rocks to provide shelter. The type of habitat available for mink is usually the controlling factor of mink populations. Mink are not bound to the water as muskrats are. Some mink may be found a considerable distance from water if sufficient food and shelter are available.

Habits: Mink are very inquisitive animals. They will investigate nearly all holes, crevices and hollow logs that are along their lines of travel. Mink often follow shorelines and streambanks in search of food. They often leave large piles of feces around the entrance to their dens.

Reproduction: Mink breed in late February through early April. They undergo the physiological process of delayed implantation. The gestation period averages 51 days. Mink have one litter per year, with usually four to five young per litter. The young are known as kits and are usually born in May. One male may mate with several females, but it will usually stay with the last one to assist in caring for the young. Mink will use abandoned muskrat dens or burrows of some other mammal to live in. Most do not live longer than three or four years and can breed when one year old.

Food: Mink are carnivores. They prefer freshly killed food rather than carrion. Some of the major foods that mink eat are frogs, mice, fish, rabbits, birds, crayfish, squirrels and muskrats.

Sign: Mink tracks can often be found along shorelines. A good way to learn about mink is to follow tracks along a snow-covered creek in the middle of winter.

Predators: People, dogs, owls, foxes and coyotes are all predators of mink.

Diseases: Mink are susceptible to anthrax, distemper and encephalitis.

Parasites: Mink may be parasitized by roundworms, flukes, tapeworms, protozoa, mites, lice, fleas and flies.

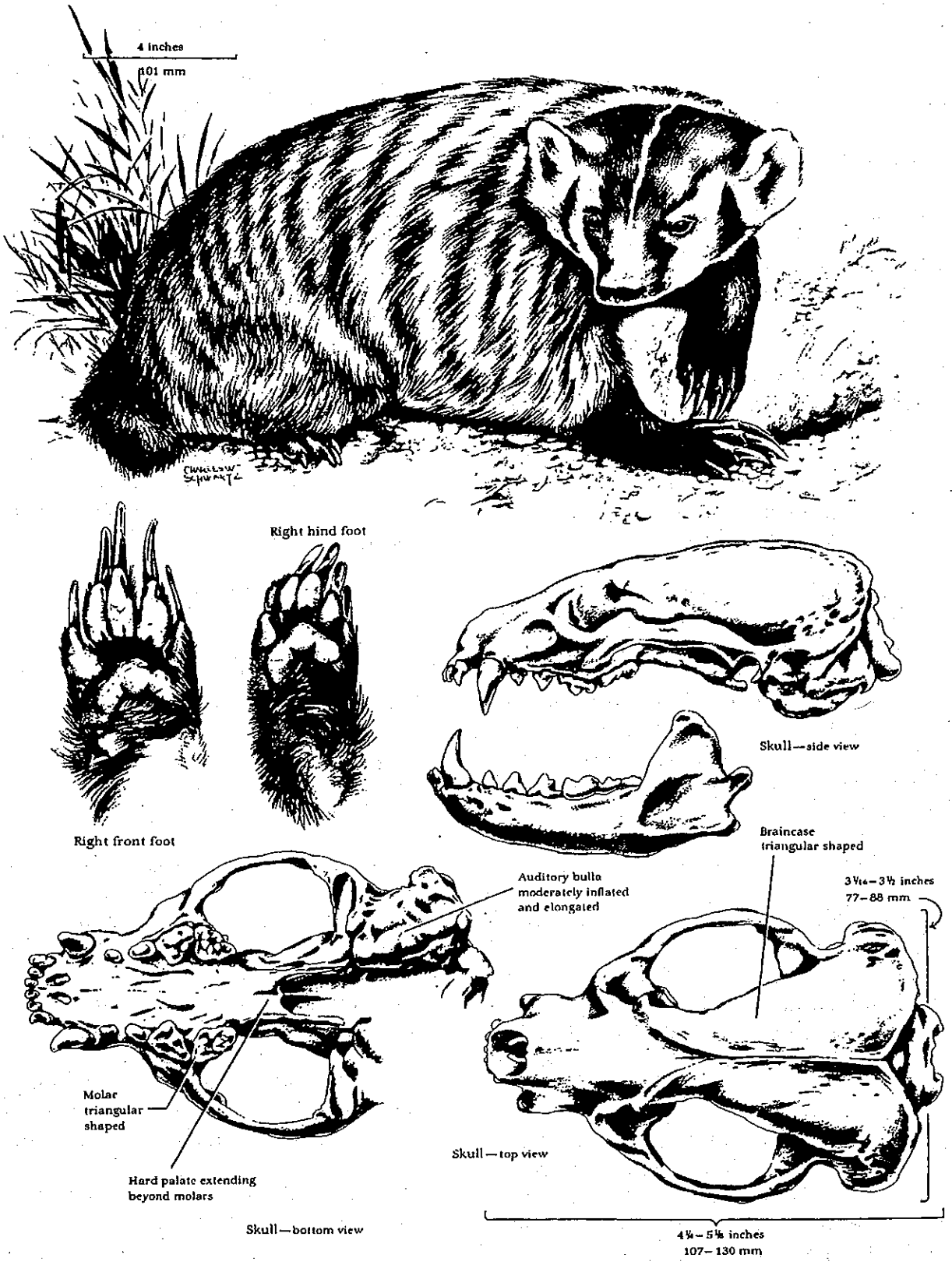
Importance: Mink have long been thought of as the leaders in the fur industry. Most mink garments are made from mink raised in captivity. Mink "ranching" became popular in the early 1900s when breeders were able to selectively breed for different colors of mink. Wild mink are important predators.

Baits and lures: Fresh fish, muskrat, mice, squirrel and mink carcasses are used as bait. Mink musk and fish oil are used as lure.

Sets: Pocket, blind and conibears in trails or covering holes and dens.

Common Name - **Badger**

Scientific Name - ***(Taxidea taxus)***



Common Name - **Badger**

Scientific Name - ***(Taxidea taxus)***

Description: Badgers are medium-sized, heavy-bodied animals. Adult females average about 17 pounds in weight while adult males average 24 pounds. They range from 26 to 35 inches in length. Badgers have wide, flattened bodies, short, powerful legs and short, bushy tails. They are adapted for digging, having large front feet with massive claws over an inch long. The fur on the upper parts is grizzled gray and black with a slight yellowish tinge. The underparts and the short tail are yellowish. A white stripe runs from the nose to the crown of the head and tapers off on the neck or back. The badger has white cheeks and an elongated black spot in front of each ear. The feet are black.

Habitat: Throughout most of its North American range badgers prefer open country, living in the prairies and plains where ground squirrels and other small burrowing mammals are abundant. In Iowa, badgers are distributed throughout the state, although they are less abundant in timbered regions.

Habits: Badgers are active mostly at night, spending daytime underground. Body fat is stored during late summer and serves as an energy reserve for the coming winter. Badgers do not actually hibernate but do spend most of the winter underground, occasionally coming out on warmer winter days. Although they do not spray they will release a strong musk odor when disturbed. Badgers will often make a hissing sound when they feel threatened. Badgers have an insatiable desire for digging. They have often been called pioneers because they dig numerous dens that are available for other animals, such as fox, raccoon and skunks, to live in once they have departed.

Reproduction: Very little is known about the reproduction of the badger. Mating probably takes place in September. There is delayed implantation of the embryos until February or later, and the embryos then develop in approximately five weeks. This makes a total of only about six weeks for the entire period of development, although the whole gestation period may last seven or more months. A single litter is born in April or May and averages three young. At birth the young are furred and blind. Eyes open at about five weeks of age. Weaning occurs when the young are about half grown, but the female continues to bring food to them. The young stay in and around the burrow until fall. Some females will breed when one year old.

Food: Badgers are strictly carnivores with their most important foods being rodents and rabbits. When ground squirrels are not plentiful, mice of all kinds are sought and eaten. In the wild, badgers do not seem to require water to drink since they often live far from surface water.

Sign: The most obvious indication that badgers are present is the occurrence of tunnels, dug in open fields, with a large mound of dirt in front of them. Often the badgers will excavate several shallow holes at the same site when digging out a gopher. Badger tracks are sometimes mistaken for coyote tracks but can be distinguished by the five toes and the claw marks of the front feet, which are well in front of the toe marks. Badgers normally cover their droppings (scats) or leave them underground.

Predators: People are the major adverse factor affecting badger populations.

Diseases: Very little is known about badger diseases. They are apparently susceptible to tularemia and rabies.

Parasites: Ticks, fleas and roundworms parasitize badgers as do many other kinds of parasites.

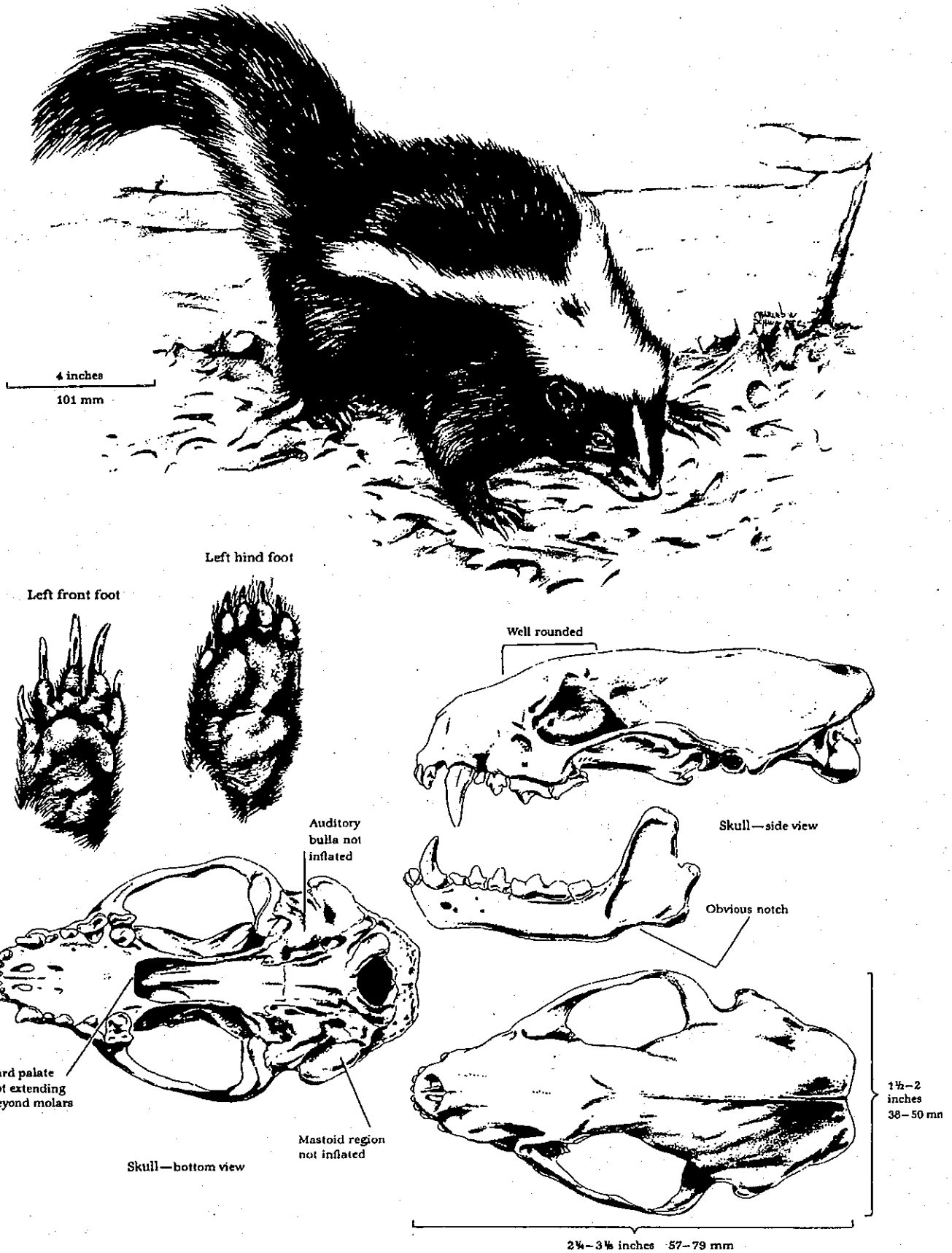
Importance: Few fur harvesters pursue badgers. Some badgers are taken in traps set for other predators, but most are trapped or shot near areas that they have dug extensively. Badger fur is used almost exclusively as trim.

Baits and lures: Most baits and lures used for fox and coyote will attract badger.

Sets: Dirt hole and scent-post sets. Longer chains and stakes will prevent the captured badger from digging them up and escaping.

Common Name - **Striped Skunk**

Scientific Name - ***(Mephitis mephitis)***



Common Name - **Striped Skunk**

Scientific Name - ***(Mephitis mephitis)***

Description: A member of the weasel family, the striped skunk is black with white on its head and two stripes that begin at the neck and extend back toward the hip region. The length of these stripes is quite variable, and a few skunks are completely black. The large, bushy tail is mainly black but is mixed with white to varying degrees. Skunks are wide-backed with a relatively small head. Most striped skunks weigh from four to ten pounds.

Habitat: Skunks are at home in a variety of habitats but prefer timber borders, brushy field corners, fence rows, rock piles, old building sites and open grassy fields. They customarily den in the ground, but occasionally rock piles, refuse dumps, stumps and buildings will be used as denning sites. They often utilize dens discarded by other animals. Skunks gather leaves and grass to build nests within the den site.

Habits: Striped skunks may leave their dens at any hour of the day but usually begin foraging in the late afternoon and are active most of the night. Because of these nocturnal habits, they locate prey by the sense of smell and hearing rather than sight. Skunks build up a good layer of body fat in the fall. Their winter activity depends upon the temperature. They may go into a winter sleep for many weeks or months if cold weather persists. Skunks are generally not sociable animals but they will den together for warmth. It has been suggested that such communal denning can be a factor in the spread of rabies. Striped skunks will spray a very pungent musk when disturbed. The musk may travel 10 feet or more depending on the wind.

Reproduction: Mating occurs in March and, after a gestation period of 63 days, an average of six young are born in May. At birth the young weigh about one-half ounce each. They are wrinkled and almost naked but possess the adult's characteristic black and white markings. Ears and eyes are closed. Claws are well developed and at 13 days young are fully haired. Eyes open at about three weeks, and young assume a weakly defensive pose at that time. Weaning is complete at two months of age, and at that time they are first able to spray.

Food: Skunks are omnivores and eat both plant and animal foods. Insects and insect larvae and earthworms are important food for skunks when in season. Skunks occasionally are nuisances for beehive owners, feeding on bees and honey with no apparent concern for being stung. They will eat birds and bird eggs and eat large numbers of small mammals as well as scavenge on the carrion of larger animals.

Sign: Tracks and the animal's distinctive smell are the surest signs of skunks.

Predators: With the exception of great-horned owls, few animals are foolish enough to try to kill skunks. People and farm dogs are also primary predators.

Diseases: Rabies is by far the most important disease of skunks, and they readily transmit it to other animals and humans if they bite them. Over 60 percent of the skunk population likely carries rabies. Some skunks may transmit rabies even though outwardly they appear very healthy. While they are susceptible to other diseases, the concerns for rabies often mask the others.

Parasites: Mites, lice, ticks, fleas, roundworms, flukes and tapeworms are parasites of this species.

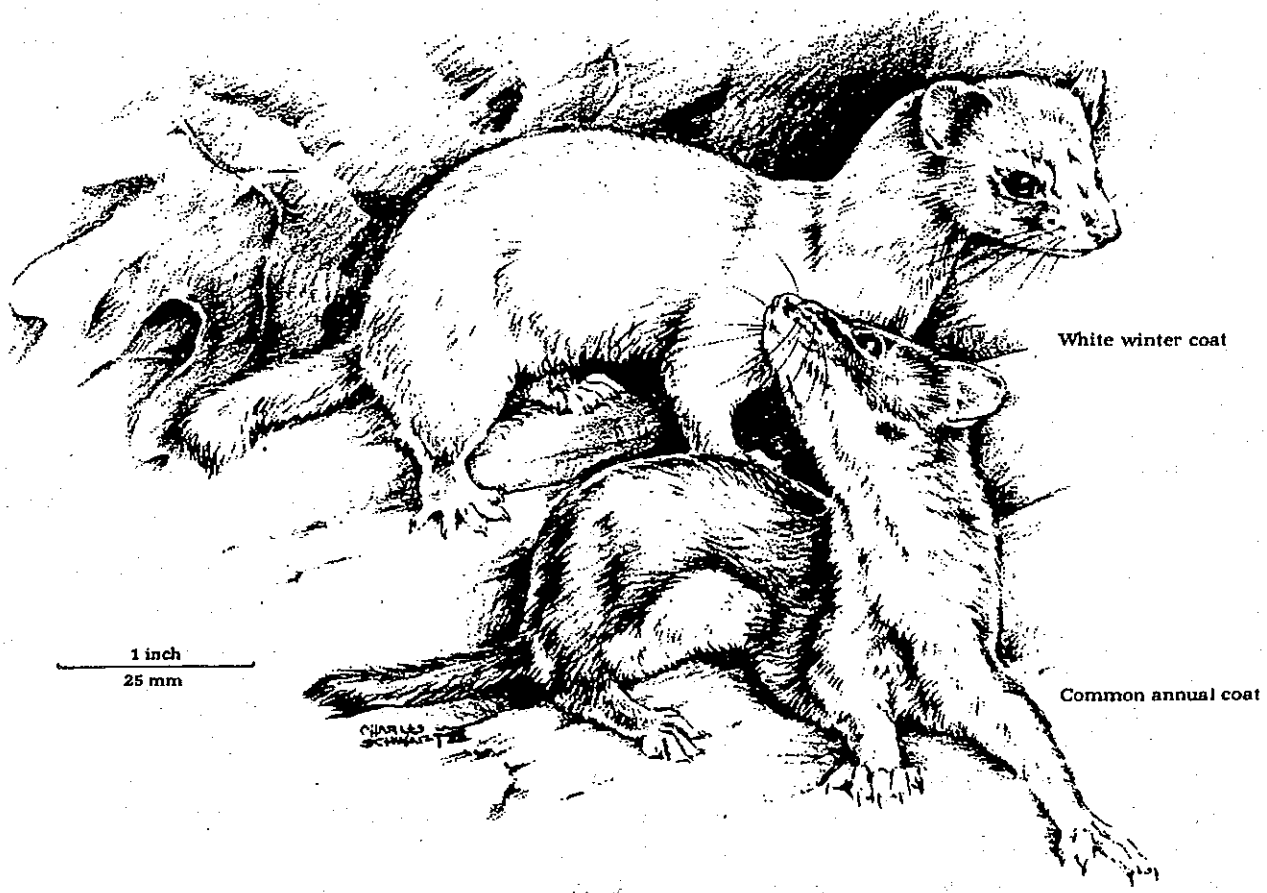
Importance: Skunk fur coats were very fashionable in the 1920s. Today there is not a very large market for skunk pelts. Usually only the black fur is used for making garments. Skunk scent is used in some trapping scents and has recently been used instead of mace in human repellents. Their appetite for insects, insect larvae, mice and other small mammals helps somewhat to counter the other offensive aspects of the species.

Baits and lures: Skunks are easily trapped and are attracted to most commercial fox and coyote lures, scents and baits. Fresh or tainted meat and fish or fish oil are also good attractants.

Sets: Dirt hole, scent-posts, cubbies and cage traps.

Common Name - Weasels

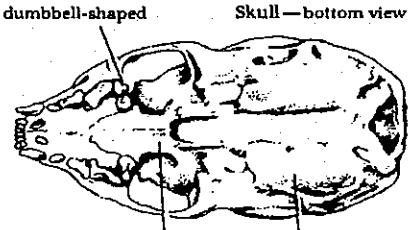
Scientific Names - ***Least Weasel (Mustela nivalis)***
Short-tailed Weasel (Mustel erminea)
Long-tailed Weasel (Mustela frenta)

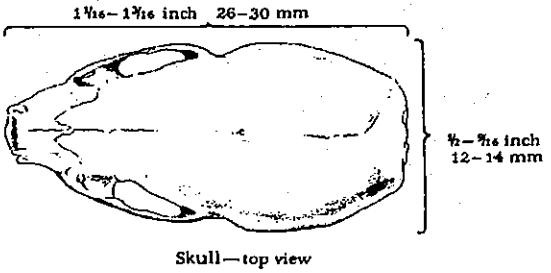



Right front foot—winter


Right hind foot—winter


Skull—side view





Skull—top view

Common Name - Weasels

Scientific Names - ***Least Weasel (Mustela nivalis)***
Short-tailed Weasel (Mustel erminea)
Long-tailed Weasel (Mustela frenta)

Description: Weasels are also members of the mustelid family. They are extremely small. An adult least weasel may weigh as little as one and one-half ounce! Weasels are long, slender animals with head, neck and body about the same diameter. They have very short legs. Their fur is short and very soft. Weasels are usually brown with white bellies. Weasels may turn to an all-white pelage in the winter in which case they are referred to as ermine. Generally long- and short-tailed weasels are 8 to 20 inches long including their tail. They usually weigh from 3 to 12 ounces depending on the species. The species of weasels found in Iowa are listed above in ascending order of size.

Habitat: Weasels live in a variety of habitats but prefer woodlands, thickets and brushy fence rows near available drinking water. Their home is a shallow burrow, often the former abode of a mole, ground squirrel or mouse. Weasels may also live in rock piles, under the roots of trees and, on occasion, in an old building where mice are plentiful. Within the burrow they construct a nest of rabbit or mouse fur, grass and sometimes feathers.

Habits: These mammals are very suspicious and inquisitive and are continually investigating their surroundings. They hunt both day and night but are more active at night. So persistent are weasels in their hunting activity that in a single night they may travel up to 3 1/2 miles and yet remain very close to their den site. In spite of their small size, weasels are extremely aggressive and fearless. Weasels may attack animals larger than themselves often inflicting fatal bites near the head region. Because of their agility and speed they can follow prey over all sorts of terrain and obstacles. During the winter their pelage often turns completely white, an excellent example of nature's protective camouflage or coloration.

Reproduction: Weasels also reproduce by delayed implantation. Mating occurs in August but young are not born until the following May. A single litter ranges from 1 to 12 young with an average between five and eight. At birth young are blind, toothless, wrinkled and practically naked. Fur and teeth appear at three weeks. Eyes open at five weeks of age and weaning begins. Young males do not mate the first summer, although females mate when three to four months old.

Food: Weasels eat animal foods primarily, including mice, rats, voles, squirrels and rabbits. They will also eat birds, bird eggs, reptiles, amphibians, worms and insects. Weasels are voracious killers and often times will cache surplus food items for later use. Drinking water is essential.

Sign: Tracks of the weasels are fairly distinctive in the snow, and active burrows often have bones, feathers and other food remains nearby. Latrine sites are generally close to active weasel dens.

Predators: The most common predators are foxes, coyotes, cats, hawks, owls, snakes and people. Occasionally least weasels fall victim to short-tailed and long-tailed weasels.

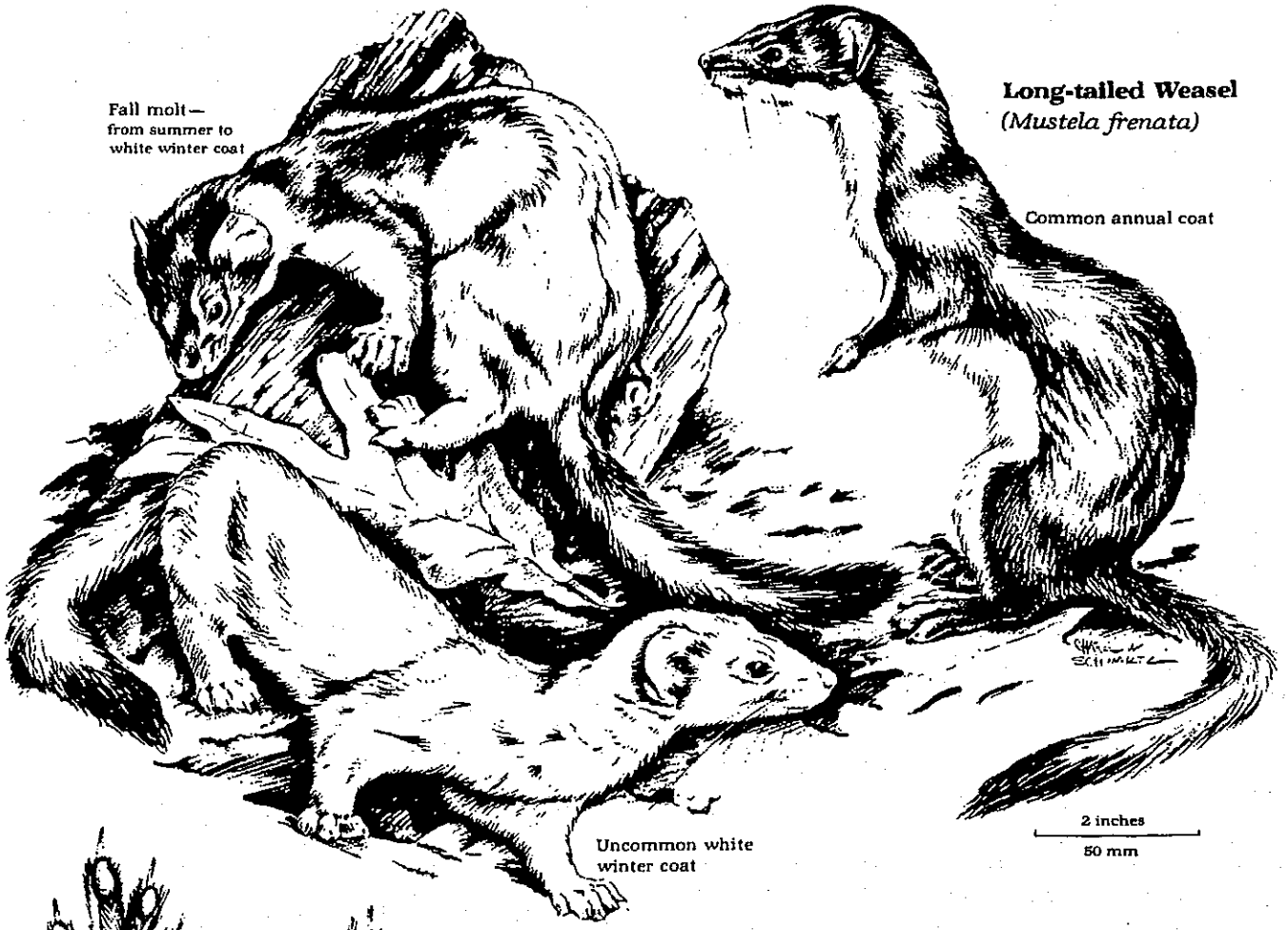
Parasites: Parasites include ticks, fleas, roundworms, and flatworms.

Importance: The weasal trapping season closed in 1976 over concern about law populations. However in 1988 the season reopened and most weasel populations appear to be doing very well. Weasel fur is soft and durable. Pelt values are currently low, but the white ermine fur has some appeal for trimming cloth and novelty. They should be appreciated for their uniqueness with the least- weasel being our smallest carnivore. They are also important in that they feed on large numbers of mice, voles and other small mammals. Recent research studies in Iowa indicate that they may also be a significant nest predator feeding on eggs in several ground nesting species, especially waterfowl.

Baits and lures: Fresh fish, mice or other birds or animal meat. Musk, fish oil and some commercial lures.

Sets: Pocket, blind, den and small cubby sets.

Special Note: Short-tailed Weasels are smaller featured than long-tailed weasels but are larger than least weasels. They are commonly called ermines particularly in their winter white pelage. Because of size variation between ages and sexes of weasels, the only sure way to identify the long-tailed and short-tailed weasels is by examination and comparison of their skulls. The distribution of the short-tailed weasel in Iowa includes only the northern one third of the state.

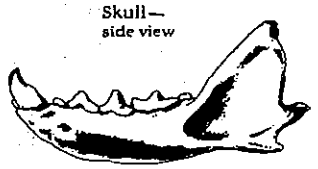


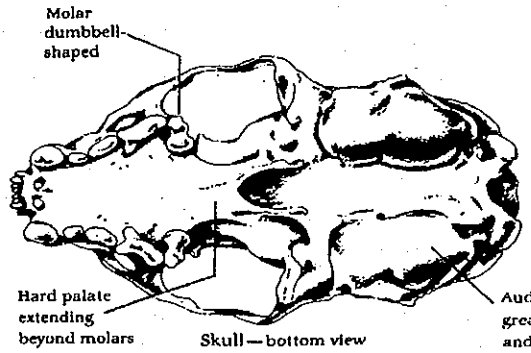

Right front foot—summer

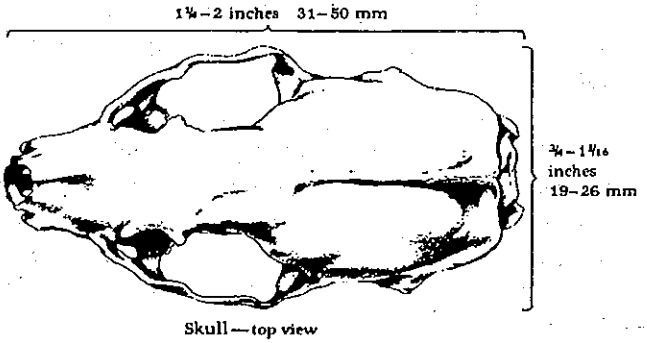

Right hind foot—summer


Right hind foot—winter


Skull—
side view







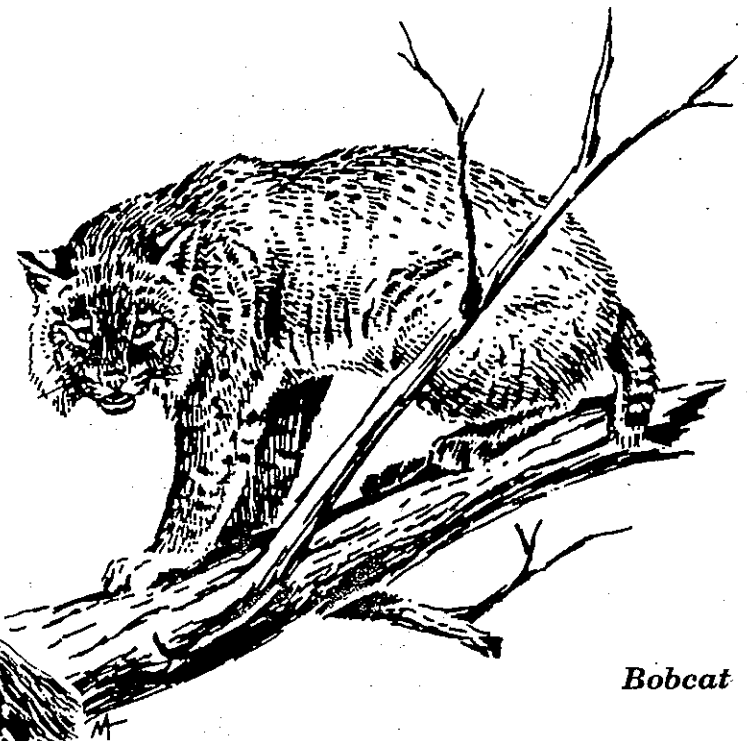
Species That May Not be Harvested

The following information is included as a general information source. It should be emphasized that the following species are NOT legal to harvest in Iowa. We hope that this information will make people more knowledgeable about protected species and give them a greater appreciation for them.

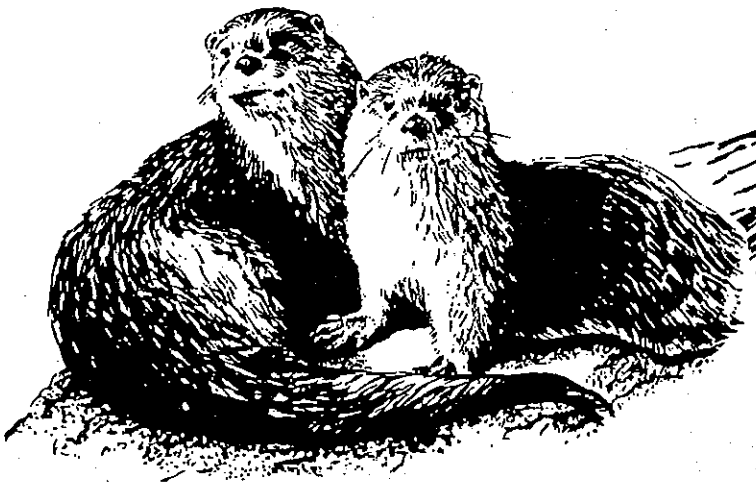
Students should also be aware of these species' habits so that they will be able to avoid the unintentional capture of these animals.

It is impossible to completely eliminate the unintentional capture of some animals while trapping common furbearers, but it is possible to keep the unintentional captures at a minimum. It is with this in mind that the following information is presented. Fur harvesters are also reminded that if they are unable to POSITIVELY identify an animal that has been captured, they should release the animal unharmed, if possible, then call their conservation officer.

Spotted Skunk - (Civet Cat)



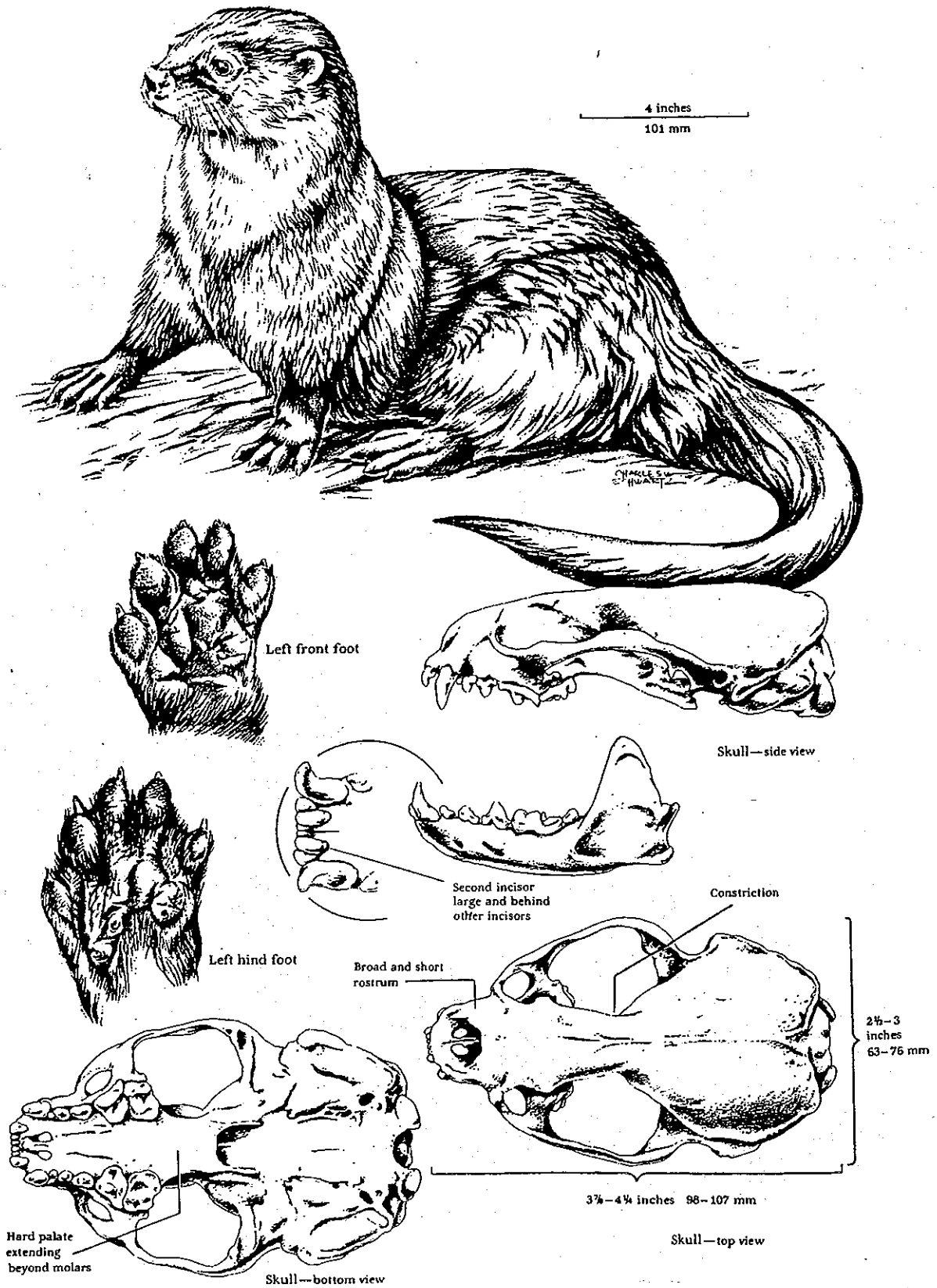
Bobcat



River Otters

Common Name - **River Otter**

Scientific Name - ***(Lutra canadensis)***



Common Name - **River Otter**

Scientific Name - ***(Lutra canadensis)***

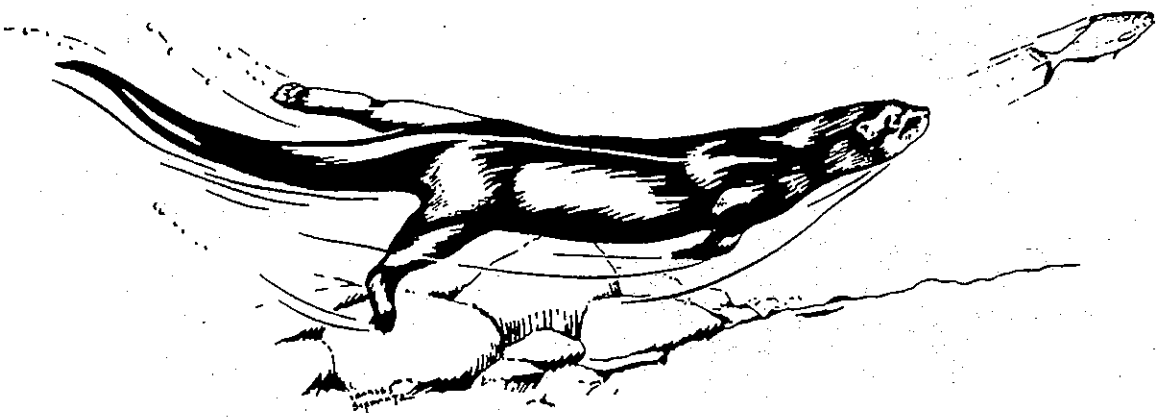
***The Iowa Department of Natural Resources is proposing a limited take season on the River Otter. For more information please visit the Iowa Department of Natural Resources Website at www.iowadnr.com**

Description: The river otter is a member of the mustelid family. Otters look similar to very large mink. They have long slender bodies with dark brown fur. 'Their legs are quite short and their feet are webbed. Unlike mink or weasels, otters' tails are very strong and muscular. Adults may reach a length of more than 40 inches and usually weigh 20 to 25 pounds.

History: River otter were common throughout the state prior to European settlement. Unregulated harvesting and destruction of habitat led the otter to near extirpation. Otters have always been found along Iowa's eastern border in or near the Mississippi River. The otter has been reintroduced to the state's inland waters. The first stocking of otters took place at Lake Red Rock in March 1985. The Iowa Department of Natural Resources — along with help from Iowa's fur harvester organizations and the ISU Fisheries and Wildlife Biology Club — hopes the stocking efforts will result in a viable, reproducing population.

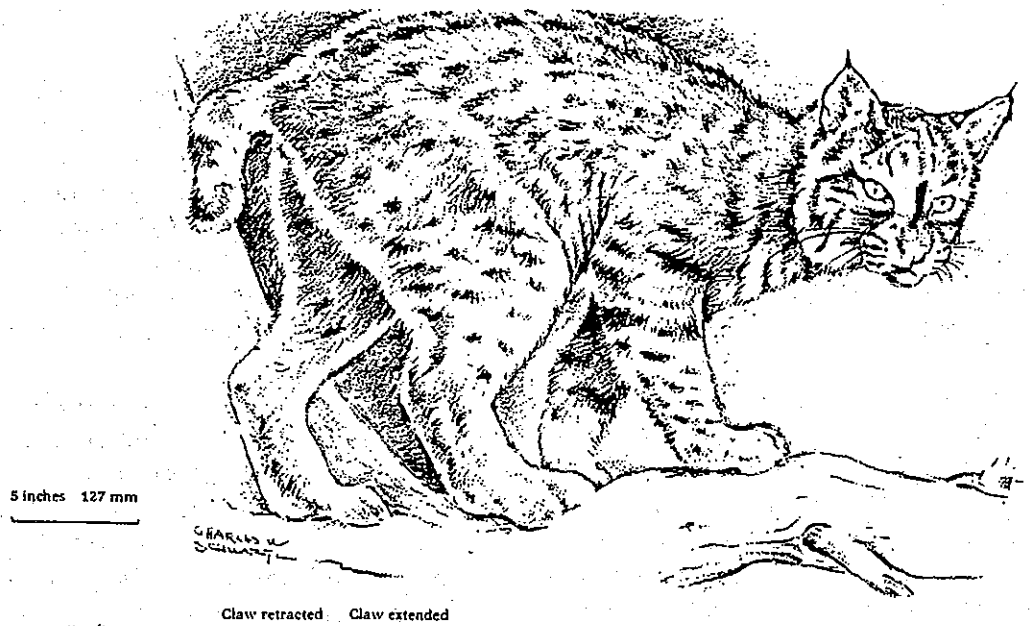
Current Distribution: Otter frequently inhabit the Mississippi and Missouri Rivers and their associated tributaries. They have been released at the following locations: Lake Red Rock near Runnells; Otter Creek near Tama; Raccoon River near Panora; Boone Forks near Stratford; Rathbun Lake near Russell; on the Little Sioux River near Petersen; Nodaway River near Morton Mills; Wapsi River near Waubeek; Sweet Marsh near Tripoli; Winnebago River near Mason City; and on the Cedar River near St. Ansgar. Future otter stockings will likely occur.

Precautions: All fur harvesters should know where otters have been reintroduced in the state. Fur harvesters in areas near release sites must follow special guidelines established by the DNR. (See Fur Harvester Regulations chapter and annual hunting and trapping synopsis). The setting of traps within 10 yards of beaver dens or dams is prohibited near release sites. Otters have traveled over 100 miles from release sites so they may be encountered in any part of Iowa! If sign of otters is observed, the fur harvester should follow the established guidelines for trapping near release sites and contact DNR personnel to relay the information. Otter accidentally captured by fur harvesters MUST be reported to a conservation officer or other DNR personnel. Live otters can be released, but caution must be exercised as they are extremely quick and readily bite.

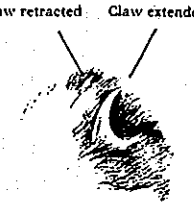


Common Name - **Bobcat**

Scientific Name - ***(Felis rufus)***



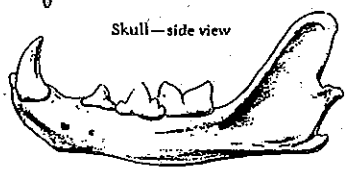
Claw retracted Claw extended



Right front foot

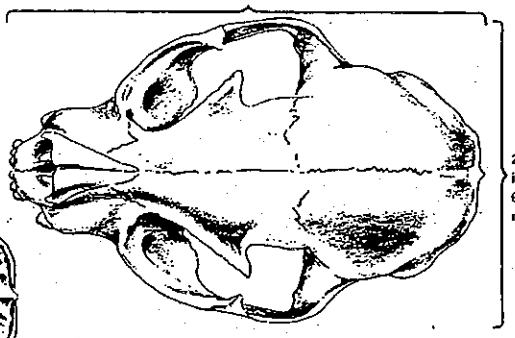
Short face and rounded forehead

Skull—side view



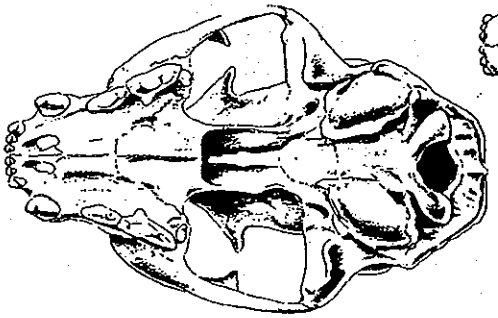
Right hind foot

4–5½ inches 101–139 mm

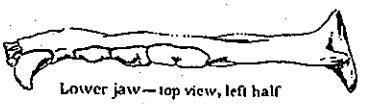


2¾–4⅛ inches 69–104 mm

Skull—top view



Skull—bottom view



Lower jaw—top view, left half

Common Name - **Bobcat**

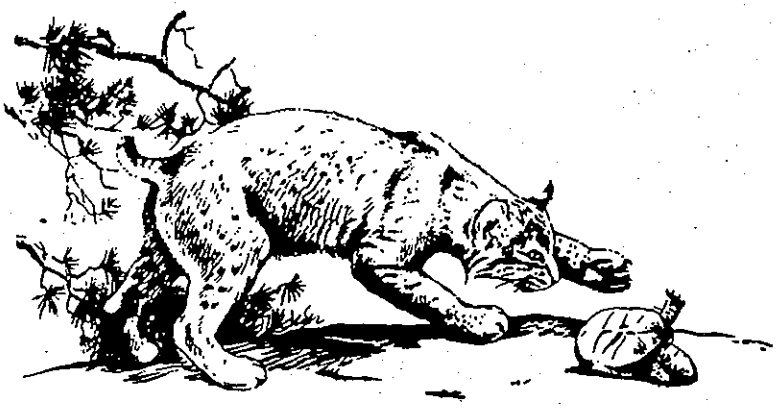
Scientific Name - ***(Felis rufus)***

Description: The bobcat is a member of the family Felidae or cat family. It looks very much like at overgrown house cat. Bobcats are long-legged cats with short, stubby tails. They are usually reddish-brown and may have either distinct or faint black spots. The back is usually darker than the belly. Since the belly is lighter in color the most distinct spots occur there. A bobcat stands about 28 inches tall at the shoulder and commonly weighs from 15 to 30 pounds.

History: Although presently considered endangered, the bobcat once occurred throughout much of Iowa although it is unknown how common they were. It retreated to the woodland areas as Europeans settled the land. Reintroduction of the bobcat has been proposed in the past and may be proposed again. It will take education of the public to calm unfounded fears that bobcats are predators of domestic livestock.

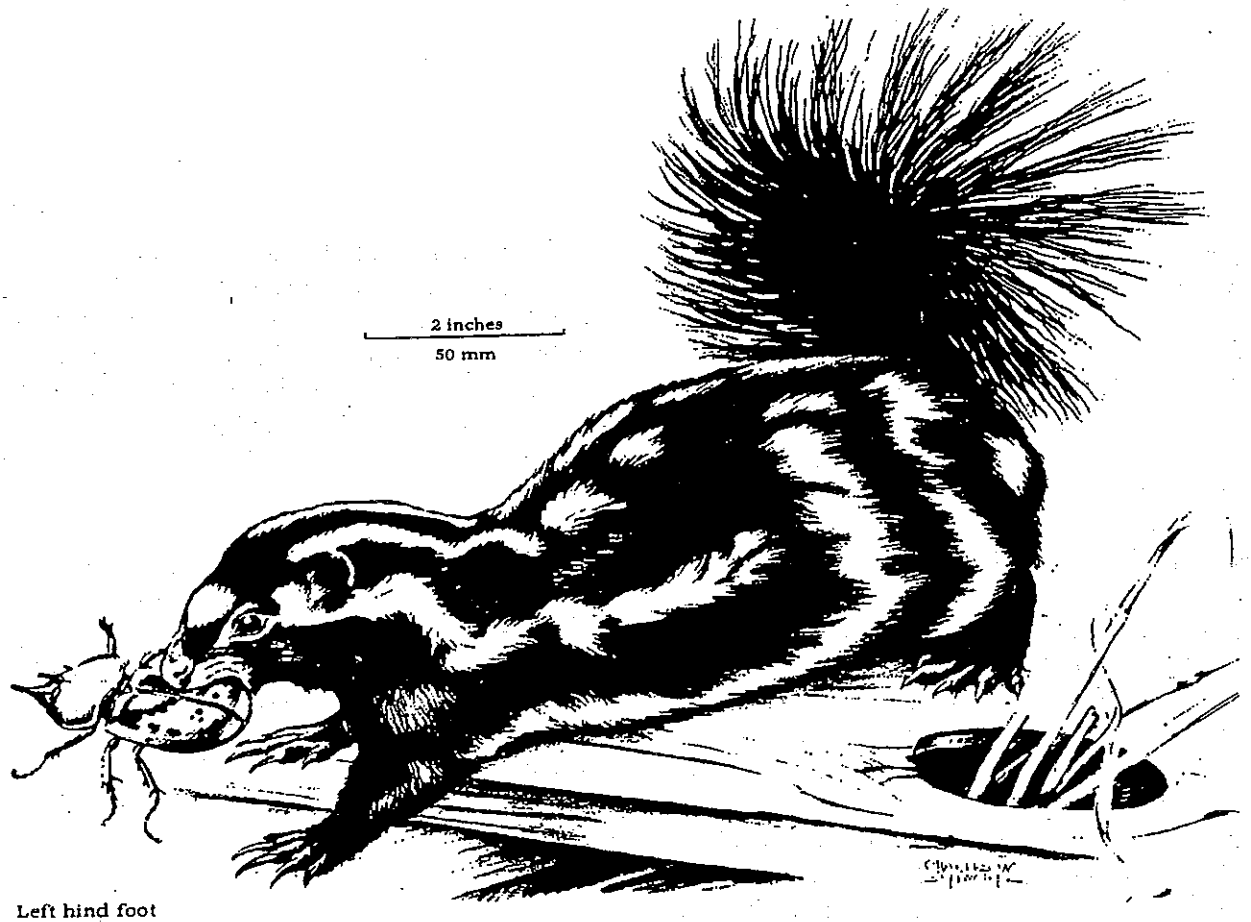
Current Distribution: Bobcats occur most frequently in the forested regions of the northeast quarter of Iowa. However a very small number of sightings are reported from other timbered regions of the state and early 1990's has brought about an increase in sightings over southern and eastern Iowa.

Precautions: Nearly 90 percent of the bobcat's diet is rodents. Bobcats are especially attracted to sets that are also attractive to the wild canines. Because they have relatively large feet, they can sometimes be avoided by using the smallest traps possible (size 1 1/2) when trapping fox. Visual flagging and dryland cubby sets are effective on bobcats and therefore should be avoided when trapping in areas where sign is present.



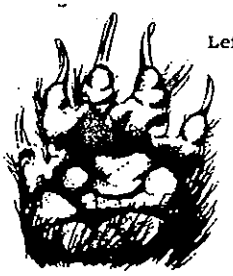
Common Name - **Eastern Spotted Skunk**

Scientific Name - ***(Spilogale putorius)***



Left hind foot

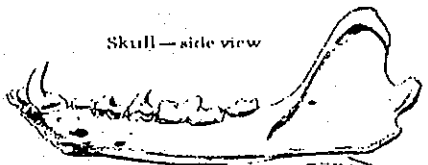
Left front foot



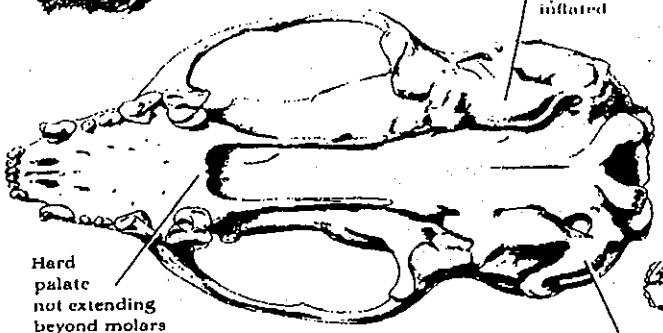
Nearly flat

Auditory bulla slightly inflated

Skull—side view

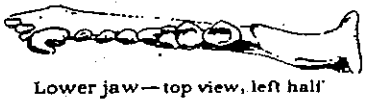


No obvious notch



Hard palate not extending beyond molars

Skull—bottom view



Lower jaw—top view, left half

Mastoid region inflated

Skull—top view

Common Name - **Eastern Spotted Skunk**

Scientific Name - ***(Spilogale putorius)***

avoided when trapping in areas where sign is present.

Description: The spotted skunk, or civet cat, is a member of the mustelid family. It is commonly known as civet cat, but civet cat is not an accurate name since it is neither a member of the true civet family nor the cat family. The spotted skunk is similar to the more common striped skunk; however the spotted skunk is much smaller. The overall color is black with white spots that may be joined together to form stripes. They have a distinctive white spot on the forehead and four to six white stripes or series of spots that extend from the head along the length of the body. Spotted skunks usually only weigh from one to three pounds.

History: The population of spotted skunks rose as the Europeans settled Iowa. They benefitted from the diversity of small farm operations. The old farmsteads provided a much improved habitat over the natural prairies and woodlands. Now, modern farming practices have virtually eliminated the spotted skunk from Iowa. Removal of wood piles, old buildings, fences and brushy areas; decreases in hay acreage; increasing amounts of rodent-proof grain storage; chemical farming practices; and

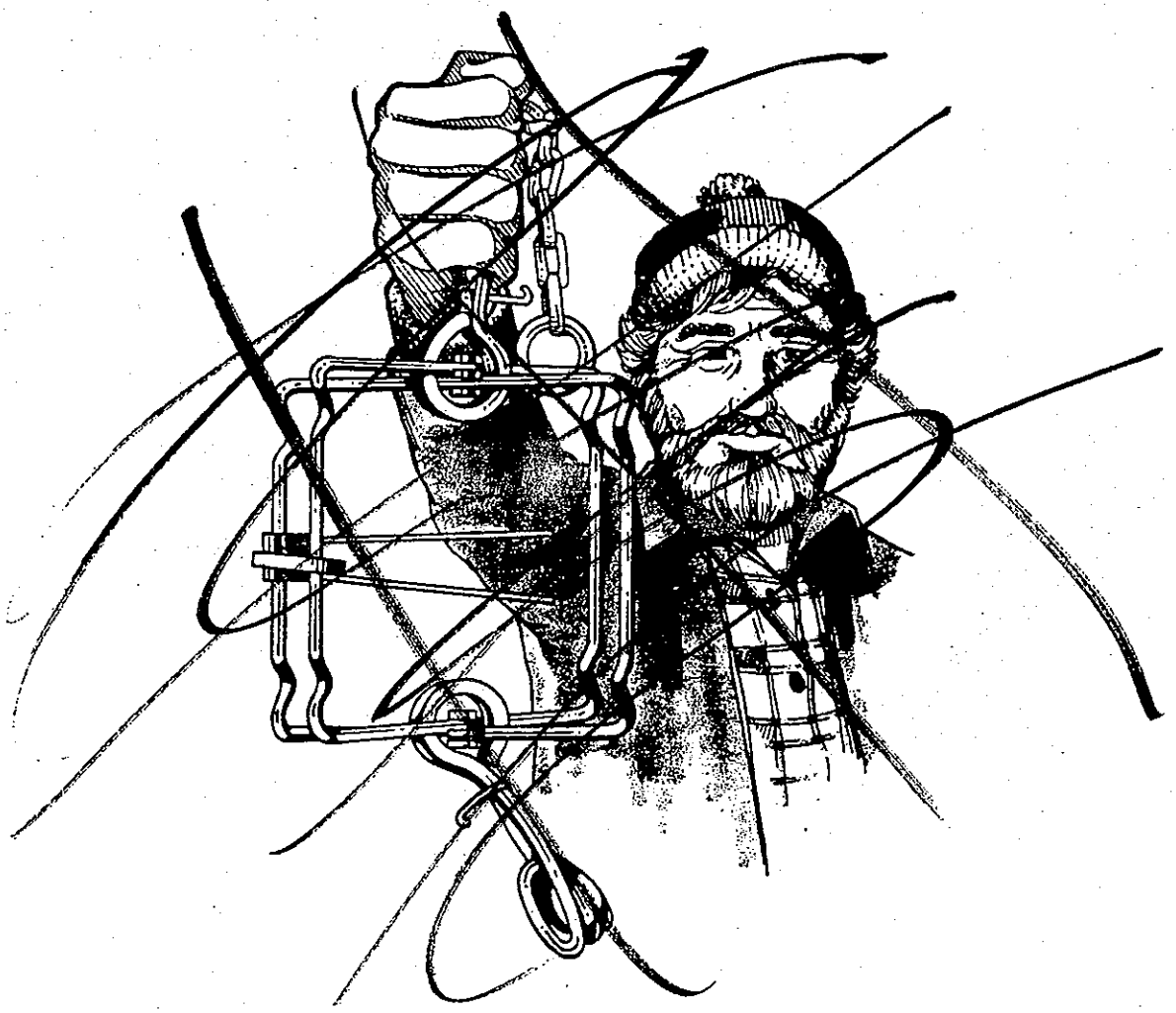
Current Distribution: Spotted skunks may be found throughout Iowa, but their densities are very low.

Precautions: ***No methods are known that will prevent the capture of this species specifically. The most important step in avoiding capture of this furbearer is to have pan tension set properly. All protected furbearers accidentally caught while trapping other species should be turned over to the DNR.***

The following fubearers have been extirpated from Iowa or have never appeared in Iowa. These species will only be present in Iowa under rare circumstances. Fur harvesters do not need to consider the possible accidental capture of these animals since they do not inhabit in Iowa. If, on the rare chance that an unusual animal is captured or sighted, it should be reported to DNR personnel immediately.

Bear	Mountain Lion
Fisher	Nutria
Lynx	Wolf
Marten	Wolverine

(Notes)



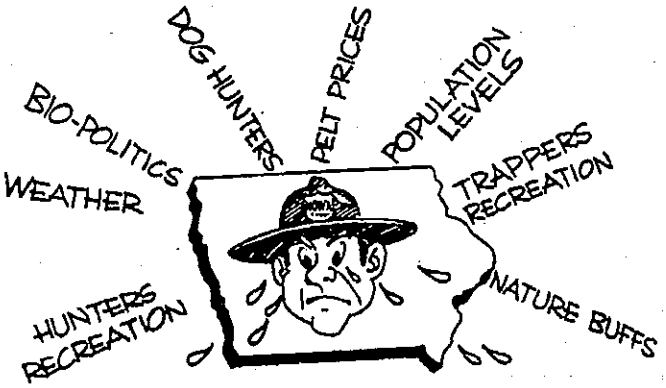
Furbearer Management in Iowa

The DNR manages Iowa's furbearer resources for the benefit of the citizens of the state. The DNR recognizes that furbearers have a variety of ecological, recreational, economic and aesthetic values. These values can be positive or negative. Since values are determined by people, not nature, the same animal can have a wide range of values depending on the time, place and person being affected by it.

The goal of management is to maintain a productive harmony between people and the furbearer resources for present and future generations of Iowans. This goal is accomplished by maintaining habitats and controlling harvests so that harvestable surpluses can be utilized, consistent with habitat, disease, wildlife damage, and the desires and tolerances of people. In order to manage furbearers responsibly, the DNR monitors furbearer populations and harvests, sets regulations, maintains habitats and enforces laws related to furbearers.

Seasons

In Iowa the DNR sets seasons primarily based on their impacts on the furbearer populations. The DNR attempts to set seasons that will allow the maximum amount of recreational opportunity, while still sustaining the resource year after year. No season which would be detrimental to the survival of a species is permitted. Once the biological requirement is met, further decisions are based on the concerns of people who use, value or are affected by the resources. Recreational opportunity, landowner concerns, fur primeness, damage problems, nonharvest values, disease problems and other factors all enter into these decisions. Opportunities for public input are provided.



Some fur harvesters are critical of the DNR for not considering pelt values more when setting seasons. Because furbearers are so adaptable and because of certain landowner tolerances, seasons are set somewhat prior to and extend somewhat beyond the peak pelt primeness period.

Surveys

Harvest and fur price surveys are conducted for all species of furbearers in Iowa. In addition, relative changes in population densities are monitored. Raccoon spotlight surveys, otter track and slide surveys, and muskrat house counts are used. Input from fur harvesters and DNR personnel provide important insights to furbearer population trends.

Habitat

Although furbearers are often not the highest priority in many habitat management programs, the fact remains that furbearing animals are primary beneficiaries of many of these practices. This is particularly true of wetland areas, which are prime habitat for muskrat, mink, beaver, raccoons, foxes and other animals. Furbearers often do so well on these areas that conflicts, such as high nest predation, occur with other species.

Forest management practices also influence furbearer populations. Some species favor dense, brushy stages and others favor less dense mature stands. Although it is difficult to say which habitat benefits furbearers the most, timbered river and stream valley corridors are probably the most important habitats for furbearers. Protecting and creating stream and river valley greenbelts will benefit many fur species. Planting trees and shrubs, protecting den trees, building and erecting artificial "nesting" boxes for raccoon, and water level manipulation for aquatic furbearers can greatly improve habitat.

Enforcement

Iowa's Conservation Officers enforce the laws and regulations relating to furbearers in all counties of the state. Of course, they have many more duties in addition to the furbearer regulations, but they are always interested in and concerned about situations where violations are occurring. It is also important for fur harvesters to police their own ranks and to help enforcement officers by reporting violations. People who take furbearers illegally are stealing from the honest citizens of the state. The Turn In Poachers (T.I.P.) program has been and should continue to be enthusiastically supported by all fur harvesters.

Conservation and Furbearer Management

Furbearer regulations are established for the entire state or for large regions of the state, depending upon the species. Conditions vary from region to region. It is wise for fur harvesters to practice conservation, leaving a few animals to reproduce on their areas. This sounds simple, but it can become complicated when a number of fur harvesters are competing for the same resources in the same area. This means that any one fur harvester can take only a portion of the excess.

Fortunately for most furbearers, harvesting tends to be self-limiting. The time and effort required to take furbearers exceeds the benefits long before furbearer populations are reduced to critical levels. However, for a few species which are not so resilient, regulations have to be correspondingly more restrictive. A good example of this is the river otter. When their populations are suitable for harvest, regulations are more complex so viable otter populations can be sustained.

Wildlife Diseases

Your fur harvestering activities will routinely bring you into contact with animals. You should be aware of diseases and parasites carried by wild animals and should take common-sense precautions. Since doctors may not routinely look for some types of diseases which may be contracted from wildlife, it is the fur harvester's responsibility to inform the doctor of their outdoor activities if a puzzling disease should develop.

A few simple, common-sense precautions will greatly reduce the risks of contracting diseases or parasites from wild animals: (1) Wear plastic or rubber gloves when skinning or handling furbearers or scats; (2) Wash hands thoroughly after handling animals; (3) Avoid animals that are behaving abnormally or that are obviously sick; (4) Do not drink directly from streams or lakes; (5) Cook all wild game thoroughly; and (6) Inform your doctor of your wildlife-related activities if a puzzling illness should develop.

RABIES–HYDROPHOBIA

The primary wildlife carrier of rabies (hydrophobia) in Iowa is the striped skunk. Rabies are occasionally found in foxes and raccoons and, while reported only rarely in all other Iowa furbearers, may occur in them, too.

Rabies is a virus which attacks the nervous system and is usually transmitted in the saliva of an infected animal when it bites a noninfected animal. In addition to bites, the virus can enter through a cut or scratch while skinning an infected animal or by coming into contact with its eyes, nose or mouth.

Rabies occurs in two forms in wildlife. In the "furious" form, the animal becomes irritable and aggressive, loses its fear and may attack other animals. In the "dumb" form, the animal becomes lethargic and may suffer various forms of paralysis. In some instances, skunks show no outward sign of rabies, but they still have the ability to expose humans and other animals if they bite them. Some studies indicate that more than 60 percent of the skunk population may carry rabies.

If you are bitten by any wild animal, wash the bitten area thoroughly with soap and water and contact a physician immediately. If possible, the animal involved should be captured or killed **without damage to the head.** If the animal must be killed, keep it refrigerated at 35 to 40 degrees (not frozen) until it can be given to experts for examination. Fur harvesters should avoid shooting skunks in the head (since most rabies viruses are in the brain) and should wear rubber gloves while skinning. A new vaccine against rabies (Human Diploid Cell Vaccine—HDCV) is now available which provides some pre-exposure protection from rabies without serious side effects. Fur harvesters who handle a lot of carnivores may want to consult with their doctor about getting this vaccine. Regardless of whether pre-

exposure vaccines have been taken or not, if bitten by an animal, **consultation with a doctor is necessary,** and saving the animal or its head for later examination will help in determining the appropriate treatment.

TULAREMIA

Tularemia is a bacterial disease of mammals found primarily in rabbits, beavers and muskrats in Iowa. The disease often results in white necrotic (dead) spots in the liver of infected animals. The disease can be transmitted to humans through cuts or scratches while skinning infected animals, from drinking contaminated water during water-borne outbreaks, from flea, tick or insect bites, or, rarely, from eating undercooked meat.

LYME DISEASE

This is a relatively new disease caused by a spirochete (a type of protozoan) transmitted by a small red and black tick commonly known as the deer or bear tick (not the tick commonly found on dogs). The disease has occurred in Iowa, although the origin is uncertain. It is characterized by circular skin lesions with possible headaches, nausea or fever. In severe cases, arthritis in one or more joints and heart problems develop. Most exposures from this very small tick occur from May through October. Doctors may not routinely look for this disease so people with these symptoms who may have been exposed to tick bites should inform their doctor. Prevention is the best medicine. Check regularly for ticks and remove them promptly. Look especially for the "moving freckles" ticks. These are most likely the deer ticks, which usually carry Lyme disease.

OTHER VIRAL DISEASES

Pseudorabies, parvovirus and distemper are diseases carried by furbearers that will infect coonhounds, foxhounds, coyote hounds, pets and livestock. Appropriate vaccinations for hounds and pets will reduce most of these concerns. Generally diseases that infect livestock occur from contaminated feed and forage. Good husbandry practices will reduce these potential problems.

LEPTOSPIROSIS

Urine, urine-contaminated water and mud can be the source of infection for leptospirosis, another spirochete bacterial organism. Infection may be subclinical, cause flu-like symptoms, or even produce life-threatening illness. Leptospires may enter the body by contamination of mucous membranes such as the eyes and mouth, through cuts and skin abrasions, and by ingestion. They affect the liver and kidneys and, in severe cases, cause jaundice (yellowing of the eyes, skin and other tissue) and kidney failure. In mild cases, there may be headache, chills, fever, muscle ache and vomiting. Leptospires can infect a multitude of furbearers and other animals and humans. They are shed in urine.

ROCKY MOUNTAIN SPOTTED FEVER (RMSF)

RMSF, or just spotted fever, is a tick-borne disease caused by a rickettsial organism which is a type of bacteria. RMSF is characterized by the sudden onset of fever which lasts for 2-3 weeks, deep muscle pain, severe headache, chills and listlessness. A rash may develop on the hands, arms, legs and then move to involve the rest of the body. Dog ticks and wood ticks are usually involved in transmision of RMSF. Many furbearers are sometimes infected by several ticks. Contrary to its name, RMSF is usually found in the eastern half of the U.S. RMSF gets its name from a federal government laboratory in Montana.

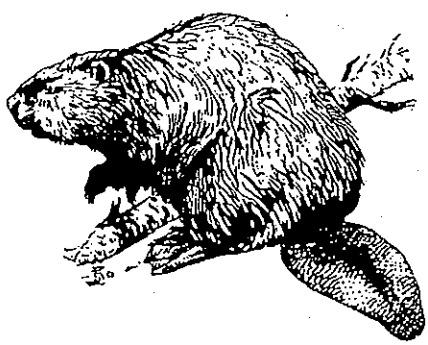
MANGE

Red foxes and coyotes are the furbearers most commonly afflicted with a parasitic mite infestation which causes a condition known as mange. The most common type of mange is sarcoptic mange. It is caused by microscopic mites which burrow into or under the skin and deposit their eggs. With time the eggs hatch and the infestation increases to the point that the animal's hair begins to fall out, and the skin becomes thickened, crusted with scabs and cracked. Mange is spread from animal to animal by contact. In Iowa it may become epidemic when red foxes are abundant and result in widespread die-offs. Mange is nearly always fatal to red foxes and sometimes fatal to coyotes but is seldom contracted by gray foxes. Fur harvesters should take care in handling animals which have mange, since it is possible for humans to experience mild infections of the mites which cause a red, itching rash.

TRICHINOSIS

Trichinosis is caused by a nematode (roundworm) parasite which produces the disease in humans and many other domestic and wild animals. Nearly all mammals are susceptible to infestation of this parasite, which encysts in the muscle of the host and is then transmitted by eating the raw or poorly cooked meat. Infestations are often most severe in the well oxygenated, active muscles such as the diaphragm or eye muscles.

If wild animals such as raccoons, opossums, beavers, muskrats and other furbearers are to be eaten, the meat should be properly prepared by cooking, freezing or curing to destroy the encysted parasites. Cooking to an internal temperature of 135 degrees F; or freezing at 5 degrees F for 20 days, minus 10 degrees F for 10 days, or minus 20 degrees F for six days will kill trichinae. Curing should follow approved government regulations.



GIARDIASIS

Giardiasis is a disease caused by a protozoan parasite, *Giardia lamblia*, carried by many species including beaver. Beaver do not appear to be severely affected by the organism, but in some states parasites excreted by infected beaver appear to have contaminated

water sources and caused outbreaks of the disease in humans. Giardia is known to be present in some Iowa water impoundments and is presumed to be caused by beaver. A variety of mammals, birds, reptiles, amphibians and fishes are also known to harbor this organism. Sometimes this disease is also referred to as beaver fever. Drinking water from safe sources will prevent giardiasis.

BAILYSASCARIS

Raccoons are host to a roundworm *Bailysascaris*, which also sheds microscopic eggs in raccoon feces. These eggs are not infective for about 30 days. They then can become airborne as dust and inhaled or can be accidentally ingested. People coming into contact with areas where raccoons have lived or concentrated such as in barns, chimneys and attics, or people who have pet raccoons, are most susceptible to infection. The eggs hatch after ingestion, and the microscopic larval worms migrate into the nervous system (spinal cord, brain) or into the eye. Symptoms are nervous system disorders. Severe infections have very rarely resulted in death. Skunks and animals affected by *Bailysascaris procyonis* may appear to be rabid due to larval migration into the brain.

ECHINOCOCCOSIS INFECTIONS (HYDATID DISEASE)

Echinococcosis or hydatid disease is infection with the larval (cystic) stage of tapeworms belonging to the genus *Echinococcus*. Cysts most commonly develop in the liver, but can also be found in the lungs, kidney, spleen, nervous tissue, or bone. One variety of the echinococcus tapeworm is largely restricted to wild animal hosts including fox and rodents. It is a highly invasive and dstructive form of disease that causes solid, tumor-like masses.

People become infected by ingesting the echinococcus eggs because of uncleanliness or by eating contaminated food, water and soil. Dogs will also act as a host and their feces can contaminate food in gardens and elsewhere.

Surgery is recommended treatment but medications are currently being developed. Prevention can be aided by not allowing dogs to feed on dead foxes, rodents or other host carriers. Good personal hygiene when handling or skinning all furbearers and disinfecting the work area is essential to reducing infections. Like the raccoon roundworm, *Bailysascaris,* if not properly treated it is potentially fatal.

OTHER PARASITES

A number of parasites, primarily tapeworms, can be contracted from wild animals if good hygiene is not practiced. Microscopic eggs of these tapeworms may be found in the feces of foxes, coyotes, cats or dogs. Human infections result from contamination of hands and accidental ingestion of eggs from feces contaminated objects, food and water.